

Burkina Faso

FY2019 Ex-Post Evaluation of Japanese Grant Aid Project

“The Project for Rural Water Supply in the Regions of Central Plateau and South Central (Phase2)”

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0. Summary

This project aimed to improve access to safe water by constructing deep-well water supply facilities with hand pumps (*Ouvrages d'Adduction d'Eau avec Forages Equipés de Pompe à Motricité Humaine*, hereinafter referred to as “PMH”), thereby contributing to improvements in residents’ water and sanitation environment in Central Plateau and South Central regions. The project is highly consistent with Burkina Faso’s development plans and needs, and Japan’s ODA policies. Therefore, the relevance of the project is high. Regarding the project inputs, the project’s cost was within the plan, and the project period was as planned. Although the number of constructed PMH was reduced due to an exchange rate fluctuation, it seems that the project inputs were commensurate with its outcomes. Thus, the efficiency of the project is high. With regard to the effectiveness, the project achieved its targets with respect to the population with access to the water supply and the water supply rates. Besides, the operation rate of PMH was high. Regarding the impacts, some cases were confirmed that women and children spent less time fetching water, thereby promoting both children’s education and women’s participation in socioeconomic activities. In addition, as a result of the provision of the stable water supply as well as positive changes in terms of residents’ increased awareness of sanitation, there were significant improvements to the living environment and to water- and sanitation-related practices, and there was a decrease in the incidence of waterborne diseases. Therefore, the effectiveness and impacts of the project are high. In terms of the sustainability, there have been no particular problems with the institutional and technical aspects and the current status of operation and maintenance. However, with respect to the organizational aspect, the PMH water quality monitoring system has not been sufficiently developed. Moreover, there have been concerns about the financial aspects, such as the status of the budget of the Regional Directorate for Water and Sanitation (*Direction Régionale de l'Eau et de l'Assainissement*, hereinafter referred to as “DREA”) and the status of reserve funds for operation and maintenance expenses in some villages. Therefore, the sustainability of the project is fair.

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

1. Project Description



Project Locations



PMH constructed by the project

1.1 Background

In Burkina Faso, where more than 80% of the population lived in rural areas, the rural water supply rate was as low as 51.5% as of 2006,¹ forcing many residents to rely on shallow wells and surface water from rivers for their domestic water supply. Given these circumstances, in 2006, the Government of Burkina Faso developed *the National Program for Water Supply and Sanitation by 2015 (Programme National d’Approvisionnement en Eau Potable et d’Assainissement à l’horizon 2015*, hereinafter referred to “PN-AEPA 2015”), setting the goal of increasing the water supply rate in rural areas to 80% by 2015.

The Government of Japan has focused on supporting the water sector in rural areas with large numbers of poor people and has implemented the preceding grant aid project, “Project for Rural Water Supply in the Regions of Central Plateau and South Central” (hereinafter referred to as “Preceding Project”), in Central Plateau and South Central regions from 2009 to 2012 with the aim of improving access to safe water. However, although the water supply rate in both regions grew steadily as a result of the implementation of the Preceding Project s, it was not likely to reach the target of 80%, as set in PN-AEPA 2015. In light of this, when the Preceding Project started in 2009, the Government of Burkina Faso requested further assistance from the Japanese government, which resulted in the implementation of this project.

1.2 Project Outline

The objective of this project was to improve access to safe water by constructing PMH, thereby contributing to an improved water and sanitation environment for the residents of the three provinces (Ganzourgou, Kourwéogo, and Oubritenga) in Central Plateau region as well as those in three provinces (Bazéga, Nahouri, and Zoundwéogo) in South Central region.

¹ Source: PN-AEPA 2015, Rapport Bilan Annuel Au Decembre 2011

Grant Limit / Actual Grant Amount	Detailed Design: 47 million yen / 47 million yen Construction: 968 million yen / 966 million yen
Exchange of Notes Date / Grant Agreement Date	Detailed Design: December 2012 / December 2012 Construction: November 2013 / November 2013
Executing Agency	General Directorate of Drinking Water of the Ministry of Water and Sanitation (<i>Direction Générale de l'Eau Potable, Ministère de l'Eau et de l'Assainissement</i> : hereinafter referred to as "DGEP")
Project Completion	July 2016
Target Area	- Three provinces (Ganzourgou, Kourwéogo, Ouhritenga) in Central Plateau region - Three provinces (Bazéga, Nahouri, Zoundwéogo) in South Central region.
Main Contractor	Koken Boring Machine Co., Ltd.
Main Consultant	Japan Techno Co., Ltd.
Preparatory Survey	December 2010 to February 2012
Related Projects	<Technical Cooperation Projects> - Project for Enhancement of Water Supply Infrastructure Management and Hygiene and Sanitation in the Region of Central Plateau (hereinafter referred to as "PROGEA") (2009-2013) - Project for Enhancement of Water Supply Facilities Management and Hygiene and Sanitation in Rural Areas Phase 2 (hereinafter referred to as "PROGEA II") (2015-2020) <Grant Aid Projects> - Project for Clean Water Supply for the Eradication of Guinea-Worm (1998) - Project for Rural Water Supply in the Regions of Central Plateau and South Central (2009)

2. Outline of the Evaluation Study

2.1 External Evaluator

Akiko Shimizu, Value Frontier Co., Ltd

2.2 Duration of Evaluation Study

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

Duration of the study: September 2019 – September 2020

Duration of the field study (in Senegal): January 4, 2020 – January 6, 2020

2.3 Constraints during the Evaluation Study

The first field visit of ex-post evaluation was canceled due to the deterioration of security in Burkina Faso. For this reason, the external evaluator provided guidance and instructions to a local consultant in a third country (Senegal) with regard to carrying out the field survey. The

local consultant collected information and conducted site visits under the external evaluator's remote supervision. The second field visit was canceled due to the outbreak of COVID-19. The external evaluator conducted the survey remotely from Japan, guiding and instructing the local consultant.

3. Results of the Evaluation (Overall Rating: A²)

3.1 Relevance (Rating: ③³)

3.1.1 Consistency with the Development Plan of Burkina Faso

At the time of ex-ante evaluation, the Government of Burkina Faso prioritized “improving access to social services” in the revised version (2004) of *the Poverty Reduction Strategy Paper (Cadre Stratégique de Lutte contre la Pauvreté*, hereinafter referred to as the “CSLP”) (2000), addressing “ensuring access to drinking water for the poor” as one of its basic social services. In addition, in accordance with the CSLP and *Millennium Development Goals* (MDGs), the target of increasing the water supply rate in rural areas to 80% by 2015 was set in PN-AEPA 2015.

At the time of ex-post evaluation, *the National Plan of Economic and Social Development 2016–2020 (Plan National de Développement Economique et Social 2016–2020)* (2016) listed improved access to water as a key issue and set a target to increase the water supply rate (national average) from 71% in 2014 to 79% in 2020. In addition, *the National Programme on Drinking Water Supply 2016–2030 (Programme National d'Approvisionnement en Eau Potable à l'Horizon 2016–2030*, hereinafter referred to as “PN-AEP 2030”) was formulated in 2016 as a national strategy for the water supply and sanitation sector, setting a target to achieve a 100% water supply rate in rural areas by 2030.

Given that the project aimed to improve access to safe water, it can be said that it has been consistent with Burkina Faso's development policies at the respective times of both ex-ante and ex-post evaluation.

3.1.2 Consistency with the Development Needs of Burkina Faso

At the time of ex-ante evaluation, according to the PN-AEPA 2015 annual report (2011), the water supply rates in Central Plateau and South Central regions were 71.4% and 73.9%, respectively. They fell short of the target (80%) that had been set in the national plan PN-AEPA 2015, but they were, respectively, 12.9 and 15.4 points higher than the national average of 58.5%. Meanwhile, some villages in both regions had no water supply facilities (a 0% water supply rate), thus raising the issue of reducing the water supply disparity among the villages. The villages without water supply facilities put residents at risk of contracting waterborne diseases due to their reliance on unsanitary water from shallow wells, surface water, and

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

³ ③: High, ②: Fair, ①: Low

puddles. In addition, time-consuming task of fetching water burdened mainly women and children, which had serious consequences such as hindering women's participation in social and economic activities and resulting in children's loss of educational opportunities.

At the time of ex-post evaluation, according to *the National Inventory of Rural Water Supply Facilities (Inventaire National des Ouvrages d'approvisionnement en eau potable en milieu rural*, hereinafter referred to as "INO") (2019), the water supply rates in Central Plateau and South Central regions were 84.6% and 86.7%, respectively, which are 16.2 and 18.3 points higher than the national average of 68.4%. However, further development of the water supply sector is required to achieve the target of a 100% water supply rate set in the current national plan PN-AEP 2030. As for the water supply disparity between villages, according to the INO (2019), although there are no longer any villages with a 0% water supply rate in either region, the lowest water supply rates in the villages in Central Plateau and South Central regions are 15.1% and 17.4%, respectively, and thus the water supply disparity between villages is still considerable. Furthermore, according to *the National Strategy for Management of Village Water Supply Services 2020–2030 (Stratégie nationale de gestion du service public de l'eau potable en milieu rural 2020–2030*, hereinafter referred to as "SNG") (2018) and interviews with residents, women and children still assume the responsibility of fetching water, hence the need to construct water supply facilities has remained as high as it was at the time of ex-ante evaluation.

Considering that the objective of the project was to improve access to safe water thereby ameliorating the water and sanitation environment for the residents of the target areas, one can say that the project has been consistent with the development needs of Burkina Faso, at the times of both ex-ante and ex-post evaluation.

3.1.3 Consistency with Japan's ODA Policy

The ODA Charter (2003), at the time of ex-ante evaluation, identified "poverty reduction" as one of four pillars; it also prioritized "water and sanitation." *The ODA Medium-Term Policy* (2005) also identified "poverty reduction" as one of four priority issues, and "expansion of basic social services such as safe water" was indicated in it. Moreover, *Japan's ODA Databook by Country* (2008) also identified "water and sanitation" as a priority area.

Since the project aimed to improve access to safe water, one can say that the project was consistent with Japan's aid policies at the time of ex-ante evaluation.

In light of the above, the project has been highly relevant to the Burkina Faso's development plans and development needs, as well as Japan's ODA policies. Therefore, its relevance is high.

3.2 Efficiency (Rating: ③)

3.2.1 Project Outputs

The project outputs consisted of (1) the construction of new PMH and (2) the provision of technical assistance (hereinafter referred to as the “Soft Component”) to enhance the operation and maintenance capacity of PMH. While the number of constructed PMH was reduced due to the impact of exchange rate fluctuation, the Soft Component was generally implemented as planned.

(1) Construction of PMH

After the preparatory survey, the project planned to construct 300 PMH. However, due to exchange rate fluctuations (i.e., the depreciation of the yen), it was assumed, during the detailed design process, that the estimated project cost would exceed the amount that had been approved by Cabinet. For this reason, the number of facilities to be constructed was reduced by 13 PMH in each region; thus, it was decided that 274 PMH would be constructed.

Table 1. Planned and Actual Number of PMH Constructed

Region	Planned	Actual
Central Plateau	150	137
South Central	150	137
Total	300	274

Sources: Materials provided by JICA and the executing agency

The selection criteria for the target sites were changed during the implementation of the project. Deep well drilling work was carried out, targeting 274 successful wells (137 in Central Plateau region and 137 in South Central region) from the list that had been prepared in accordance with the priority criteria⁴ established by the project at the time of ex-ante evaluation. In Central Plateau region, drilling was conducted at all 201 sites that were selected during the planning stage (target sites: 137, alternative sites: 64); however, seven successful wells were short to achieve 137. Accordingly, new alternative sites were selected from the same list, but the priority criteria⁵ were set by the executing agency. Consequently, a total of 218⁶ sites have been drilled in Central Plateau region, achieving a total of 137 successful wells. Since the additional alternative sites were selected from the list that was created at the time of ex-ante evaluation, it can be reasonably concluded that its policy did not deviate from that of the ex-ante evaluation. In addition, the use of the existing list allowed for the minimization of project delays by avoiding the need to conduct an additional survey.

⁴ The criteria for site selection at the time of basic design were as follows: (1) population, (2) water supply rate, (3) distance to the existing water source, (4) groundwater potential, (5) willingness to pay for water, (6) overlap with other donors, (7) waterborne diseases, and (8) maintenance capacity.

⁵ The sites that were requested by the executing agency (additional alternative sites) were selected from the list created during basic design, based on the following four criteria: (1) sites with two unsuccessful wells among the target sites at the time of ex-ante evaluation, (2) sites with low water supply rates in the communes where the target sites situated, (3) beneficiary population, and (4) sites that do not overlap with other donors’ projects.

⁶ Seventeen additional wells were drilled, yielding seven successful wells.

(2) Soft Component

At the time of ex-ante evaluation, the institutional reform of maintenance and management of water supply facilities, “Reform of the Management System of Drinking Water Supply Facilities in Rural and Semi-Urban Areas” (*Réforme du système de gestion des infrastructures hydrauliques d’approvisionnement en eau potable en milieu rural et semi-urbain*, hereinafter referred to as “REFORME”), was promoted nationally in Burkina Faso. Previously, water supply facilities had been operated and maintained by the Water Point Committee (*Comité de Point d’Eau*, hereinafter referred to as “CPE”), a quartier⁷-based organization; however, the introduction of the REFORME meant the promotion of a new system in which water supply facilities were operated and maintained by the village-based Association of Water Users (*Association des Usagers de l’Eau*, hereinafter referred to as “AUE”). As such, the period of transition to the new system was underway at the time of ex-ante evaluation and during the implementation of the project. Thus, at the time of ex-ante evaluation, there were mixed situations in terms of villages where AUE were functioning, villages where AUE were not yet established, and villages where AUE had been established but were not yet functioning. In this context, this project provided technical assistance in the form of the Soft Component to strengthen the operation and maintenance system of PMH corresponding to the progress of the establishment of AUE in the target areas. In the Soft Component, two outputs were largely accomplished as planned, as shown in Table 2 below.

Table 2. Planned and Actual Outputs of the Soft Component

Plan (Indicators)	Actual
Output 1: In villages where AUE are functioning, CPE will be established ⁸ and strengthened to oversee operation and maintenance, under the control of the AUE, for PMH constructed by the project.	Output 1: Largely implemented as planned Well managers were selected at all target sites where AUE had been already established. Having received sanitation and maintenance training, beneficiary residents performed maintenance work around the well areas. The defect inspection confirmed that daily maintenance was well-performed. Moreover, due to accounting training, water fees were collected, and more than 100,000 FCFA, which was the amount required annually for the operation and maintenance of PMH, was reserved in all target AUE. Thus, Indicators 1 through 4 are considered to have been achieved. For Indicator 5, 47 out of 60 maintenance personnel received training under the Soft Component in Central Plateau region and subsequently obtained a service license. On the other hand, in South Central region, less than half (29 out of 60) maintenance personnel obtained service licenses,
Indicator 1: Whether a well manager is selected	
Indicator 2: Whether water fees are collected regularly	
Indicator 3: Whether a well area is kept clean	
Indicator 4: Whether daily maintenance (e.g., operation checks, screw tightening and greasing) is performed	
Indicator 5: Whether trained maintenance personnel obtain a service license	

⁷ Burkina Faso's administrative categories include regions, provinces, communes, and villages. Quartiers are the small sub-village unit under the villages.

⁸ At the time of detailed design, the executing agency requested JICA to avoid establishing CPE in villages where AUE had already existed, as coexistence of AUE and CPE within a single village would cause confusion. Therefore, in villages where AUE were already functioning, no CPE were newly established, so that the training was provided for AUE members who were selected by the residents' assembly.

	thus Indicator 5 is judged to be partially achieved. It should be noted, however, that there were some requirements for obtaining a license, such as the availability of tools and years of experience, for which the project could not offer support.
Output 2: In villages where the AUE are not functioning or not yet established, CPE will be established and strengthened in order to provide for the operation and maintenance of the PMH constructed by the project.	Output 2: Implemented as planned. At sites where the AUE had not been functioning or had not yet been established, ⁹ CPE were established and constitutions were created through the consensus building process. Having received sanitation and maintenance training, beneficiary residents performed maintenance work around the well areas. The defect inspection confirmed that daily maintenance was well-performed. Moreover, through accounting training, water fees were collected, and more than 100,000 FCFA, which was the amount required annually for the operation and maintenance of PMH, was reserved in all target AUE. Thus, Indicators 1 through 5 are considered to have been achieved. In terms of maintenance personnel who received training under the Soft Component, about 80% in Central Plateau region obtained service licenses. Thus, Indicator 6 is judged to have been achieved. Although the rate of obtaining a service license in South Central region is low, more than 70% of the maintenance personnel submitted the documents that were required to obtain the license, indicating that their skills have reached the required capacity level; therefore, Indicator 7 is also judged to have been achieved.
Indicator 1 : Whether a CPE is established and a constitution is created Indicator 2: Whether residents understand future management by AUE Indicator 3: Whether water fees are collected regularly Indicator 4: Whether a well area is kept clean Indicator 5: Whether daily maintenance (e.g., operation checks, screw tightening, and greasing) is performed. Indicator 6: (In Central Plateau region) Whether trained maintenance personnel obtain a service license Indicator 7: (In South Central region) Whether trained maintenance personnel's skills reach the level required to obtain a service license	

Sources: Materials provided by JICA; questionnaires that were administered to the executing agency

3.2.2 Project Inputs

3.2.2.1 Project Cost

Regarding the project cost that was planned at the time of ex-ante evaluation, the Japanese contribution was 1,015 million yen (47 million yen for detailed design and 968 million yen for construction work). The actual cost to the Japanese contribution was 1,013 million yen (47 million yen for detailed design and 966 million yen for construction work), which was 99.8% of the planned amount. Burkina Faso's contribution was 40 million yen. However, since the actual amount could not be confirmed, only the Japanese contribution was taken into account in the evaluation. Therefore, the project cost is judged to be within the plan.

3.2.2.2 Project Period

The project period that was planned at the time of ex-ante evaluation was 38 months, from December 2012 (the month of the G/A agreement) to January 2016 (the month of the final equipment delivery). However, since the number of PMH was reduced from 300 to 274 units at the time of detailed design, the duration of the project was expected to be shortened by about

⁹ By the time the Soft Component was completed, all target CPE had been integrated into AUE.

two months, to a total duration of 36 months.¹⁰ The actual project period spanned December 2012 (the month of the G/A agreement) to July 2016 (the month of the final equipment delivery), which was 44 months (with an eight-month delay). This eight-month delay occurred due to a temporary evacuation given the deteriorating security situation in Burkina Faso. Since this was an external factor, it was not taken into account in the evaluation. Therefore, the project period is judged to have been as planned (100% of the plan).

In light of the above, the project cost was within the plan and the project period was as planned. Therefore, the efficiency of the project is high.

3.3 Effectiveness and Impacts¹¹ (Rating: ③)

3.3.1 Effectiveness

3.3.1.1 Quantitative Effects (Operation and Effect Indicators)

Achievement of the indicators, the “population with water supply in rural areas”¹² and the “water supply rate in rural areas”¹³, were set at the time of ex-ante evaluation are to be verified. Additionally, the operation rate of PMH is to be verified as a supplementary indicator in this ex-post evaluation.

(1) Population with Water Supply in Rural Areas (Operation Indicator)

At the time of ex-ante evaluation, the construction of 300 PMH was expected to increase the population with water supply by 45,000 people in each region to a total of 90,000 (300 population/unit × 300 units = 90,000 people) upon completion of the project. The target values were set at 454,377 for Central Plateau region and 449,036 for South Central region, taking into account the estimated population growth rates (1.15% per year in Central Plateau region and 2.98% per year in South Central region).¹⁴ However, since the number of facilities to be constructed was reduced by 13 units in each region, as previously mentioned, this ex-post evaluation assessed achievement by subtracting the population with water supply that was expected to be served by the reduced number of facilities (3,900 people in each region (300 people/unit × 13 units)) from the original target value.

¹⁰ Source: Materials provided by JICA

¹¹ Sub-rating for Effectiveness is to be put with consideration of Impacts.

¹² The grounds for calculating the baseline value of “Population with water supply in targeted villages” that is given in the ex-ante evaluation Table could not be identified. For this reason, the indicator “Population with water supply in rural areas” that is given in the preparatory survey report is adopted in the ex-post evaluation.

¹³ The grounds for calculating the baseline and target values of “Water supply rate in targeted villages” in the ex-ante evaluation Table could not be identified. For this reason, the indicator of “Water supply rate in rural areas” is adopted in the ex-post evaluation.

¹⁴ The actual “population growth rate per annual average” for 2016–2019 was 1.17% in Central Plateau region and 2.52% in South Central region, neither of which differs significantly from the population growth rate that was estimated at the time of planning.

Table 3. Changes in the Population with Water Supply in Rural Areas

Region	Baseline	Target	Actual			
	2010	2015	2016 (*)	2017	2018	2019
		Completion Year	Completion Year	1 Year After Completion	2 Years After Completion	3 Years After Completion
Central Plateau	454,377	542,577	582,568	605,340	610,971	628,223
South Central	449,036	566,636	654,679	676,651	693,296	726,880
Total	903,413	1,109,213	1,237,247	1,281,991	1,304,267	1,355,103

Sources: Materials provided by JICA; INO

(*) At the time of ex-ante evaluation, the year of project completion was assumed to be 2015, but due to the aforementioned eight-month delay, the year of project completion was actually 2016

As shown in the table above, the target values were achieved in both regions in the year of project completion (2016), and the population with water supply in rural areas has trended upwards since then.

(2) Water Supply Rate in Rural Areas (Effect Indicator)

At the time of ex-ante evaluation, the target values of water supply rates were set at 81.2% for Central Plateau region and 77.9% for South Central region. However, since the number of facilities to be built was reduced by 13 units in each region, the ex-post evaluation recalculated this indicator's target values¹⁵ and assessed its achievement by subtracting the population with water supply that was expected to be served by the reduced number of facilities (3,900 people in each region (300 people/unit × 13 units)).

Table 4. Changes in the Water Supply Rate in Rural Areas

Region	Baseline	Target	Actual			
	2010	2015	2016 (*)	2017	2018	2019
		Completion Year	Completion Year	1 Year After Completion	2 Years After Completion	3 Years After Completion
Central Plateau	71.5%	80.6%	81.2%	81.8%	82.8%	84.6%
South Central	71.4%	77.4%	84.2%	84.5%	85.0%	86.7%

Sources: Materials provided by JICA; INO

(*) At the time of ex-ante evaluation, the year of project completion was assumed to be 2015, but due to the aforementioned 8-month delay, the year of project completion was actually 2016

As shown in Table 4 above, both regions achieved their targets in the year of project completion (2016), with Central Plateau region having an actual result of 81.2% against a target of 80.6% (0.6 percentage points over) and South Central region having an actual result of 84.2%

¹⁵ Target value for Central Plateau region: Water supply rate (80.6%) = Population served (546,477-3,900) / Population (673,360); Target value for South Central region: Water supply rate (77.4%) = Population served (567,536-3,900) / Population (728,463)

against a target of 77.4% (6.4 percentage points over). The water supply rate has continued to increase since 2017.

(3) Operation Rate of PMH (Supplementary Indicator)

Since the completion of the project (2016), all PMH that were constructed under the project have been in operation. In addition, the operation rate of PMH in the entire region remained around 90% in Central Plateau region and in the range of 91–93% in South Central region. In both regions, the operation rates of PMH that were constructed under the project are high when compared to those in the entire region.

Table 5. Average Operation Rate of PMH

Region		2016	2017	2018	2019
Central Plateau	Average operation rate of the target 137 PMH	100%	100%	100%	100%
	Average operation rate of the water supply facilities across the region	90.5%	90.9%	90.7%	92.4%
South Central	Average operation rate of the target 137 PMH	100%	100%	100%	100%
	Average operation rate of the water supply facilities across the region	92.7%	91.9%	93.4%	93.5%

Sources: Materials provided by JICA, INO, questionnaires that were administered to DREA

3.3.1.2 Qualitative Effects (Other Effects)

The ex-post evaluation set three indicators of qualitative effects: (1) the reduction of the burdensome labor of fetching water, (2) the improvement of water quality at PMH, and (3) the stable water supply at PMH. A survey using questionnaires (hereinafter referred to as a “questionnaire survey”)¹⁶ was administered to 100 PMH users,¹⁷ and a qualitative survey (hereinafter referred to as an “interview survey”)¹⁸ was conducted among PMH users, AUE members, and maintenance personnel.

(1) Reduction of the Burdensome Labor of Fetching Water

The results of the questionnaire survey showed that 99 out of 100 respondents reported that the time they spent fetching water had been reduced by an average of 143 minutes. According to

¹⁶ A total of 22 target sites (11 each in Central Plateau and South Central regions) were selected based on geographical access and security conditions. The questionnaire survey was administered to 100 people (aged 18 and above) who came to use the water supply facilities. The sample size for each province was set to be in the same ratio as the number of project target sites in each province (Central Plateau region: 24 in Ganzourgou province, 9 in Kourwéogo province, and 17 in Oubritenga province; South Central region: 24 in Bazega province, 9 in Nahouri province, and 16 in Zoundwéogo province). The average age of the respondents was 39.9 years old.

¹⁷ The gender composition was 87 females and 13 males. Most PMH users are women and children, who are responsible for fetching water, although some men who are responsible for watering livestock also use PMH. The ratio of men to women in the questionnaire survey does not necessarily reflect the actual gender ratio of PMH users.

¹⁸ A total of ten sites (five each in Central Plateau and South Central regions) were visited, taking geographical access and security conditions into account. The interview survey was conducted via group discussion, involving a total of 50 people, including water supply facility users, AUE members, and maintenance personnel.

the interview survey, carrying a barrel containing 5–10 liters of water for a long distance was a heavy workload, and the construction of PMH not only saved time but also reduced the burden of labor. Furthermore, men are mainly responsible for watering livestock in Burkina Faso, and the construction of PMH has significantly reduced the time they spend on this task by eliminating the need to travel to watering points that are located more than 10 km away.¹⁹

(2) Improvement of Water Quality at PMH

The questionnaire survey results showed that 91 PMH users described themselves as being “very satisfied” with the water quality,²⁰ while nine indicated that they were “satisfied;” notably, no respondents indicated that they were dissatisfied with the water quality. It can therefore be said that residents’ satisfaction with the water quality at the PMH constructed under the project is very high. At the PMH where the questionnaire and interview surveys were conducted, the local consultant tested for total dissolved solids²¹ (hereinafter referred as to “TDS”) using a quick water quality test kit, and the results showed an average TDS level of 446 mg/L. According to the World Health Organization (WHO) guidelines,²² while the palatability of drinking water with a TDS level that is below about 600 mg/L is generally considered to be good, a TDS level that is above about 1,000 mg/L would render drinking water significantly unpalatable. Only one site that was visited (Rapadama Village in Ganzourgou Province) exceeded 1,000 mg/L (with a TDS of 1,031 mg/L).

(3) Provision of a Stable Water Supply at PMH

The questionnaire survey results showed that 54 out of 100 respondents experienced PMH service disruptions due to malfunctions. Those 54 people experienced an average of 2.3 times of disruptions since the completion of PMH. However, it can be said that the frequency of disruptions is not high considering the 4-year period between the final delivery of PMH and the time of ex-post evaluation. Moreover, it took 1.3 days on average for repairs, indicating that the water supply has remained stable. According to the interview survey, the main cause of temporary suspension of facility use was worn out parts. However, in such cases, AUE immediately send maintenance personnel, who performs prompt repairs.

3.3.2 Impacts

3.3.2.1 Intended Impacts

¹⁹ PMH are equipped with drains for watering livestock.

²⁰ Measured on a scale of 1 to 5 (where 1 = Very satisfied, 2 = Satisfied, 3 Neither satisfied nor dissatisfied, 4 = Unsatisfied, and 5 = Very unsatisfied)

²¹ TDS consist of inorganic salts (mainly calcium, magnesium, potassium, sodium, bicarbonates, chlorides, and sulfates) and small amounts of organic matter. TDS in drinking water originate from natural sources, sewage, urban runoff, and industrial wastewater. (Source: WHO)

²² WHO: Guidelines for drinking-water quality: fourth edition incorporating the first addendum (2017)
According to this guideline, no health-based guideline value for TDS has been provided.

The following were evaluated as the impacts of the project: (1) improved living environment and water- and sanitation-related practices, (2) reduced incidence of waterborne diseases due to improved drinking water quality, and (3) increased participation in social and economic activities (resulting in social advancement and employment opportunities for women and educational opportunities for children) due to less time spent for fetching water.

(1) Improved Living Environment and Water- and Sanitation-Related Practices

All but one of the questionnaire survey respondents indicated that they have increased their water consumption mainly for cleaning, laundry, bathing, cooking, and watering livestock since the construction of PMH. It can therefore be said that the construction of PMH has realized a better environment in which more water is available. According to the interview survey, there were also changes in residents' attitudes toward sanitation, with many saying that their understanding of the importance of practices such as hand washing and their commitment to keeping the PMH water areas clean had risen as a result of attending sanitation training in the Soft Component under this project as well as in PROGEA and PROGEA II.

(2) Reduced Incidence of Waterborne Diseases Due to Improved Drinking Water Quality

Before the construction of PMH, 92 users or their family members experienced an average of 4.1 cases of waterborne diseases per year, but since the construction of PMH, these residents have not been exposed to such diseases. According to the interview survey, before the construction of PMH, some people boiled water from shallow wells or surface water for drinking, while others drank that water without boiling it to conserve both firewood and time. As a result, they reported suffering from waterborne diseases²³ three to four times per year. Such problems have been resolved since PMH were constructed under the project.

(3) Increased Participation in Social and Economic Activities Due to Less Time Spent for Fetching Water

All 99 of the questionnaire survey respondents who reported reductions in the time they spent fetching water said that they had more time to take care of their families. In addition, 90 of those respondents said they had more opportunities to participate in social activities. According to the interview survey, due to the reduced burden of fetching water, women had more time to supplement their husbands' earnings and participate in social activities, such as weddings and other events. Furthermore, some respondents reported a reduction in children's water-fetching responsibilities, resulting in them spending more time studying and playing with their friends.

Moreover, the interview survey that was conducted in the province of Bazega in South Central region found that as a result of the reduced burden of fetching water and having a stable

²³ Diarrhea, cholera, dysentery, etc.

water supply, a female resident was able to start a new venture consisting of small-scale vegetable gardening and millet cultivation.

From the Sustainable Development Goals (SDGs) Perspective



Goal 1: End poverty in all its forms everywhere
Goal 5: Achieve gender equality and empower all women and girls
Goal 6: Ensure availability and sustainable management of water and sanitation for all

Burkina Faso's poverty headcount ratio²⁴ is one of the highest in the world at 43.7% (World Bank, 2014). In addition, according to the *Gender Gap Index Report (2020)*, there are more unemployed women than men, and there is a large income gap between the genders.²⁵ Thus, in Burkina Faso, where many people already belong to the poorest class, women tend to have less opportunities to earn an income.²⁶

Under these circumstances, Ms. Nikiema, who lives in a target village (in the province of Bazega in South Central region) has been processing and selling *soumbala*, which is a food product made by fermenting *nééré* beans. She started processing and selling *soumbala* to generate an income after her husband passed away eight years ago. Since processing *soumbala* requires a lot of clean water, she said that before the construction of PMH, she operated a small-scale business, only selling to relatives and neighboring friends due to her inability to secure enough water to expand production; however, now that



Ms. Nikiema

the construction of the PMH has made safe water consistently available and reduced the burden of having to fetch water, she has been able to expand her market to neighboring villages and other areas to earn a regular income of 12,500–16,500 FCFA per month. Currently, she lives with her son, daughter-in-law and four grandchildren, and she supports her unemployed son's household, mainly by providing food and covering the expense of his children's education. Having achieved income growth and financial

²⁴ The percentage of the population living on less than \$1.90 a day.

²⁵ The ratio of female to male unemployed adults (in a labor force aged between 15 and 64) is 2.4. When the index is 1, the proportion of unemployment between men and women is equal, and if it is greater than 1, it indicates a situation in which there are more unemployed women.

²⁶ The estimated ratio of female to male earned income is 0.67. When the index is 1, it indicates that there is no income disparity between men and women, and when it is less than 1, it indicates that women have lower incomes. The index is computed using female and male shares of the economically-active population, the ratio of female to male wages, gross domestic product valued at a constant of 2011 international dollars, and female and male shares of population.

independence, Ms. Nikiema says that her self-confidence has grown. She also says that her financial and mental statuses have caused women in her village to rely on her, and she sometimes takes on a leadership role in organizing events, such as weddings.

This is an indication that the project has improved access to water (SDG Goal 6), while also contributing to woman's economic independence (SDG Goal 5) as well as increasing income (SDG Goal 1).



Soubala processed by Ms. Nikiema

3.3.2.2 Other Positive and Negative Impacts

(1) Impacts on the Natural Environment

At the time of ex-ante evaluation, the project was expected to have little or no negative impact on the natural environment. In addition, for the project to be implemented within the framework of PN-AEPA 2015, the assessment was already conducted in the *Social and Environmental Management Plan*, and it was determined that no environmental impact assessment would be required due to the nature of the project, i.e., to construct deep-well water supply facilities with hand pumps. According to the questionnaire and interview that were conducted with DGEP, DREA and the Provincial Directorates for Water and Sanitation (*Directions Provinciale de l'Eau et de l'Assainissement*, hereinafter referred to as "DPEA") at the time of ex-post evaluation, no unfavorable influence on the natural environment was found; therefore, given the nature of the project, the external evaluator judged that no negative impact on the natural environment has occurred.

(2) Resettlement and Land Acquisition

At the time of ex-ante evaluation, there was no concern about resettlement because the PMH that were to be constructed by this project were small structures. According to the questionnaire and the interview that were conducted with DGEP, DREA and DPEA at the time of ex-post evaluation, the project caused neither resettlement nor land acquisition. Consequently, having considered the content of this project, the external evaluator judged that there was no resettlement or land acquisition.

(3) Promotion of Women's Empowerment²⁷

According to SNG, the members of each AUE board hold the following six positions: representative, secretary, treasurer, information management, and sanitation (two positions).

²⁷ Empowerment means to develop a self-sustaining capacity by participating in the decision-making process as an individual and/or as a social group. Source: Initiative on Gender and Development (GAD) <https://www.mofa.go.jp/policy/oda/category/wid/gad.html> (Retrieved July 1, 2020)

SNG stipulates that one man and one woman must be in charge of the two sanitation positions. According to DREA, awareness-raising activities pertaining to gender equality and women's empowerment were carried out in the Soft Component of the project as well as in PROGEA and PROGEA II to promote increased female AUE membership, rather than limiting women's AUE participation to one woman occupying a sanitation position. Interviews with DREA and AUE members found that more women have become members of AUE boards, especially in the position of treasurer, which requires more trust and transparency.

According to the interview survey, more women in both regions said that being AUE board members has endowed them with more responsibility and confidence, allowing them to express their opinions more actively; hence, more female voices have been reflected in AUE activities than before. The interview survey that was conducted in Central Plateau region also found a case in which cleaning equipment was purchased at AUE's expense in response to women speaking out about needing to keep the water areas at PMH clean. This suggests that promoting women's participation as AUE board members may have contributed to women's participation in the decision-making process pertaining to AUE activities, thus giving them the power to chart their own lives and affect positive change in terms of their living conditions.

(4) Other Impacts

During the interview survey, residents said that access to a stable water supply has increased their income by increasing the number of livestock. One of the residents said that six of his ten sheep died due to the drought in 2013, and he was forced to sell the remainder because the drought made it difficult to maintain them. After a PMH was constructed in his area in 2016, access to a stable water supply allowed him to buy three sheep and breed six more from the original three. Since then, he has been able to generate an income of 500,000 FCFA per year from his livestock. With his increased income, his family's living conditions have improved; he bought a motorcycle and pays for his children's education as well as for his family's medical treatment.

The above demonstrates that the operational and effect indicators for quantitative effects of the project's effectiveness have been achieved. In addition, the project's qualitative effects were observed in terms of improved water quality and the provision of a stable water supply. Furthermore, the time spent fetching water was observed to have been significantly reduced. As for the qualitative effects of the impacts, the living environment and water- and sanitation-related practices were improved, and the incidence of waterborne diseases was reduced due to residents' access to a stable, safe water supply and positive changes in their attitudes toward sanitation. In addition, it was observed that women and children's participation in social and economic activities has been promoted by reducing the time they spend fetching water. Furthermore, some cases of women's empowerment were noted through female

participation in AUE board membership.

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

3.4 Sustainability (Rating: ②)

3.4.1 Institutional / Organizational Aspect of Operation and Maintenance

3.4.1.1 Institutional Aspect

The Government of Burkina Faso has been promoting REFORME nationwide since 2000. Responsibility for the operation and maintenance of water supply facilities was transferred from the national government to communes, which constitute the smallest administrative unit. At the time of ex-ante evaluation, a period of transition was underway from the maintenance system operated by CPE established at the quartier unit to that operated by AUE²⁸ established at the village unit.

At the time of ex-ante evaluation in Central Plateau region, where REFORME had been promoted with the assistance of PROGEA, 87.4% (2012) of the registered AUE had signed service agreements with the communes. At the time of ex-post evaluation (2019), registered AUE had signed service agreements with communes at a prevalence of 59.9%.²⁹ As to the reasons for the decrease in the signing rate, DREA reported that AUE have been required to renew their service agreements every two years, but some AUE have not been complying with the renewal process due to the high cost of renewal, delays in obtaining the regional governors' approval, and the institutional arrangements for service agreements. In South Central region, at the time of ex-ante evaluation, the progress of REFORME seemed slow. The number of registered AUE was small (284) in South Central region compared with the number (555) in Central Plateau region in 2012, thus evincing a situation in which there was still a large number of conventional CPE in the region. At the time of ex-post evaluation, all CPE were integrated into AUE, and 51.8% (2019) of AUE signed service agreements with communes in South Central region. Furthermore, according to the PN-AEP 2030 Annual Report 2019, while 521 (90.1%) out of 578 AUE are functioning³⁰ in Central Plateau region, only 66 (12.4%) out of 578 AUE are functioning in South Central region because some AUE have not held regular meetings or have not accumulated sufficient reserve funds. In Central Plateau region, REFORME has been continuously supported for about 10 years to facilitate its promotion as a PROGEA and PROGEA II target area. South Central region, on the other hand, became a target area since PROGEA II. This may explain why the Central Plateau region has more functioning

²⁸ Each AUE manages multiple water supply facilities that are located in several quartier.

²⁹ PN-AEP 2030, Rapport National Bilan Annuel 2019

³⁰ The status of AUE with respect to whether they are functioning is determined based on 11 criteria, including paying commission fees to communes, reporting, holding regular meetings, and paying maintenance personnel.

AUE than South Central region.

Table 6. Progress of REFORME

	2012		2019	
	Central Plateau	South Central	Central Plateau	South Central
Number of villages	550	532	581	547
Number of registered AUE	555	284	578	533
Number of AUE (among all registered AUE) that signed an agreement with a commune	485 / 555 (87.4%)	0 / 284 (0%)	346 / 578 (59.9%)	276 / 533 (51.8%)
Number of AUE (among all registered AUE) that open a bank account	N/A	N/A	413 / 578 (71.5%)	513 / 533 (96.2%)
Number of functioning AUE among all registered AUE	N/A	N/A	521 / 578 (90.1%)	66 / 533 (12.4%)

Sources: PN-AEPA 2015, Rapport Bilan Annuel 2012; PN-AEP 2030, Rapport National Bilan Annuel 2019

3.4.1.2 Organizational Aspect

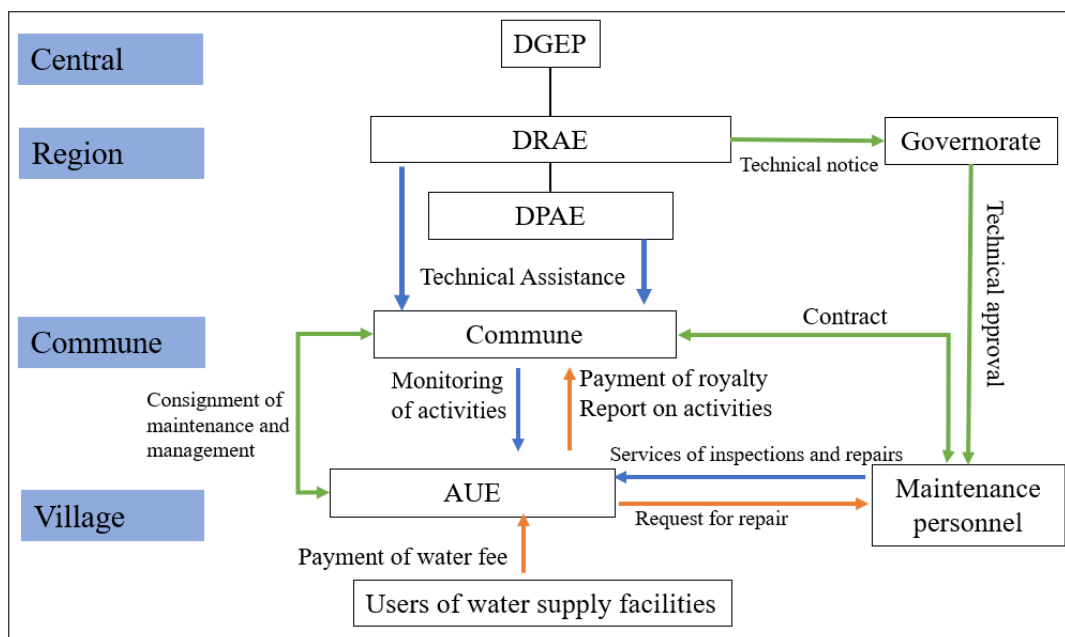
(1) Organizational Structure

At the time of ex-ante evaluation, the executing agency was the Directorate of Water Resources (*Direction Générale des Ressources en Eau*, hereinafter referred to as “DGRE”) in the Ministry of Agriculture and Water Resources, but since the reorganization of the ministry in April 2016, DGEP has been the executing agency. DREA is located in each region, and there are DPEA under the jurisdiction of DREA. There is no DPEA where a DREA is located (e.g., in the province of Oubritenga in Central Plateau region and in the province of Zoundwéogo in South Central region), and the DREA concurrently performs the DPEA’s duties.

Table 7. Each Organization’s Role in the Maintenance of PMH

Organization	Main Role
DGEP	Applying and securing the standards and criteria relating to water resources and planning public water supply services within the framework of national policies
DREA	Planning water supply projects at the regional level, promoting and monitoring the implementation of the water supply strategy, providing technical assistance and advice to communes, and following up with maintenance personnel (e.g., providing training)
DPEA	Promoting and monitoring the implementation of the water supply strategy, providing technical assistance and advice to communes, and following up with maintenance personnel (e.g., providing training)
Commune	Ensuring the smooth operation of public water supply services, delegating the operation and maintenance of water supply facilities to the AUE, and monitoring AUE activities
Maintenance personnel	Regularly inspecting PMH (biannually), repairing PMH as requested by the AUE, and reporting activities to communes
AUE	Operation and maintenance of PMH, paying commission fees to communes, reporting activities to communes (biannually), collecting water fees, and promoting water supply facility sanitation awareness among PMH users.

Sources: Questionnaires that were administered to DGEP, DREA, and DPEA; Materials provided by DGEP and DREA



Source: Prepared by the external evaluator, quoting from SNG

Figure 1. Operation and Maintenance System of PMH

(2) Personnel Structure

DREA and DPEA are staffed as shown in Table 8 below. DREA has reported that the personnel allocation makes it difficult to provide adequate support to the communes or revitalize support for AUE activities and monitoring tasks, especially the personnel allocation of DPEA. Meanwhile, according to DREA in both regions, they have been working to strengthen the capacity of existing staff as a countermeasure to the staffing shortage. At present, there is insufficient number of staff to maintain PMH; however, in 2019, the Ministerial Council of Ministers of Water and Sanitation approved extra measures with respect to the recruitment of personnel, and more officials are expected to be hired for 2020.

In the communes, a focal point in charge of water and sanitation has been allocated through the Ministry of Water and Sanitation, and a system to monitor the operation of PMH has been established. In addition, the Ministry of Water and Sanitation plans to assign each commune a technical officer in charge of water sanitation.

Table 8. Staffing Situation of Each Government Organization

Organization		Number of Personnel	
DREA (Drinking Water Supply Service Division)	Central Plateau (Oubritenga Province)	5	
	South Central (Zoundwéogo Province)	3	
DPEA (Drinking Water Supply Service Division)	Central Plateau	Ganzourgou Province	1
		Kourwéogo Province	1
	South Central	Bazéga Province	3
		Nahouri Province	2

Sources: Questionnaires that were administered to DGEP and DREA

(3) Water Quality Monitoring System

At the time of ex-ante evaluation, the biannual water quality monitoring of 300 PMH was estimated to cost a total of 36 million FCFA. It was assumed that the Regional Directorate of Agriculture and Hydraulics in the Ministry of Agriculture and Hydraulics (*Direction Régionale de l'Agriculture et de l'Hydraulique, Ministère de l'Agriculture et de l'Hydraulique*) would, under the supervision of DGRE, the executing agency at that time, put a system in place and finance and administer water quality tests. As the water quality of the water sources may change in the future due to changes in the natural environment and the aging of the facilities, the regular water quality monitoring is required to ensure a safe, sustainable water supply. However, at the time of ex-post evaluation, water quality tests at PMH were only carried out at the time of new construction or rehabilitation, and there was no system for the regular water quality monitoring.

3.4.2 Technical Aspect of Operation and Maintenance

Maintenance personnel, consisting of repairmen, who are classified as Level 1, and repair firms,³¹ which are classified as Level 2, perform regular biannual PMH operation and maintenance inspections. The number of repairmen and repair firms that were licensed by the governor at the time of ex-post evaluation is shown in Table 9 below.

Table 9. Number of Licensed Maintenance Personnel

Region	Repairman (Level)	Repair Firm (Level2)
Central Plateau	72	3
South Central	69	2

Sources: Questionnaires that were administered to DREA

According to the DREA, the maintenance personnel has a certain capacity due to the technical training provided by the Soft Component of the project as well as by PROGEA and PROGEA II. The interview survey that was conducted among AUE members and water facility users found that there seems to be no concern about the technical aspects of operation and maintenance, as a number of interviewees said that the maintenance personnel responded promptly to problems at water supply facilities, such as by replacing parts. However, according to DREA, there were a few cases of repeated PMH malfunction, and it is therefore necessary to provide continuous technical training on an ongoing basis. Moreover, some cases were reported in which underwater pipes were placed directly on the ground during regular inspections or repairs, and spare parts were not sufficiently sanitized. DREA has thus noted that it is essential to conduct training to strengthen the capacity of the maintenance personnel on an ongoing basis.

³¹ Repair firms are capable of performing more advanced repairs than repairmen since they possess the necessary repair equipment.

3.4.3 Financial Aspect of Operation and Maintenance

(1) Financial Situation at the Administrative Level

According to DREA, a large portion of the budget has been allocated for infrastructural work such as the construction and renovation of water facilities, while only a very small portion has been allocated for technical assistance activities, such as training for maintenance personnel and support for communes. Since technical assistance was, up until recently, implemented with support from PROGEA II, which ended in March 2020, it is now necessary to secure a budget for the continuation of those activities.

Table 10. Financial Situation of DREA (Unit: Million FCFA)

		2016	2017	2018	2019
Central Plateau DREA	Budget	337	931	327	163
	Expense	N/A	885	325	162
	Balance	N/A	46	2	1
South Central DREA	Budget	284	701	281	363
	Expense	233	668	308	294
	Balance	51	33	-27	69

Sources: Questionnaires that were administered to DREA

According to the communes, financial resources to support and monitor AUE activities have been generated mainly from commission fees collected from AUE, but the existing financial resources are insufficient.

(2) Financial Situation at the Village Level

AUE charges water fees to the users of each PMH for the provision of management services. From their water fee revenue, AUE then pay commission fees amounting to 10,000 FCFA per year³² to communes. The remaining water fee revenue is deposited into a bank account as a reserve fund to be used as needed for daily maintenance and repairs. According to DREA, for reasons such as residents' refusal to pay water fees, some AUE have not been able to reserve the necessary amount of 150,000 FCFA per year³³ for repairs and maintenance. The interview survey found that some AUE collected water fees amounting to only 60,000–85,000 FCFA per year.³⁴ AUE without adequate reserve funds can manage daily maintenance and the replacement of spare parts without difficulty; however, when major repairs are needed, such

³² REFORME is under the process of revision and is expected to be approved by the end of 2020. After the revision, commission fees paid by AUE to communes will be reduced from 10,000 FCFA to 5,000 FCFA. In addition, the service agreement is currently signed between commune and maintenance personnel, so AUE pay communes for the repairs and maintenance personnel receive the payment from communes. After the revision, it will be a tripartite agreement between communes, AUE and maintenance personnel, and AUE will be able to pay for repairs directly to the maintenance personnel.

³³ According to SNG, the annual cost of maintenance for PMH is recommended to collect water fees of 150,000 FCFA/year/PMH, although it depends on the age and manufacturer of the water pump or other equipment.

³⁴ Among the AUE at the sites where the interview survey was conducted, 7 out of 10 had inadequate reserve funds, amounting to less than 100,000 FCFA.

AUE will have difficulty covering the expense.

3.4.4 Status of Operation and Maintenance

According to DREA and DPEA, the PMH constructed by the project are functioning well. The external evaluator has also judged that the PMH are properly maintained, considering their high operation rates, as demonstrated by the supplementary indicator. This judgment is bolstered by the fact that any malfunctioning PMH were repaired within one or two days, as supported by the questionnaire survey results. At one of the sites that was visited during the administration of the questionnaire survey, the PMH was found to be in a state of disrepair; however, it has been confirmed that the PMH was restored to full function at a later date.

The above indicates that although there are no problems with the institutional aspect of operation and maintenance, there are concerns with the organizational aspect because DREA and DPEA are short-staffed. In addition, the PMH water quality monitoring system has not been established. With regard to the technical aspect of operation and maintenance, it can be concluded that the maintenance personnel have a certain level of technical capacity due to the implementation of the Soft Component as well as the Technical Cooperation Projects. On the other hand, it is necessary to secure a budget that allows DREA to continuously provide training for maintenance personnel and provide support for communes. Moreover, in terms of the financial aspect of operation and maintenance at the village level, it was observed that some AUE do not have adequate reserve funds. No particular issues were observed with respect to the current status of PMH operation and maintenance.

In light of the above, some minor problems have been observed in terms of the organizational and financial aspects. Therefore, the sustainability of the project effects is fair.

4. Conclusion, Lessons Learned and Recommendations

4.1 Conclusion

This project aimed to improve access to safe water by constructing PMH, thereby contributing to improvements in residents' water and sanitation environment in Central Plateau and South Central regions. The project is highly consistent with Burkina Faso's development plans and needs, and Japan's ODA policies. Therefore, the relevance of the project is high. Regarding the project inputs, the project's cost was within the plan, and the project period was as planned. Although the number of constructed PMH was reduced due to an exchange rate fluctuation, it seems that the project inputs were commensurate with its outcomes. Thus, the efficiency of the project is high. With regard to the effectiveness, the project achieved its targets with respect to the population with access to the water supply and the water supply rates.

Besides, the operation rate of PMH was high. Regarding the impacts, some cases were confirmed that women and children spent less time fetching water, thereby promoting both children's education and women's participation in socioeconomic activities. In addition, as a result of the provision of the stable water supply as well as positive changes in terms of residents' increased awareness of sanitation, there were significant improvements to the living environment and to water- and sanitation-related practices, and there was a decrease in the incidence of waterborne diseases. Therefore, the effectiveness and impacts of the project are high. In terms of the sustainability, there have been no particular problems with the institutional and technical aspects and the current status of operation and maintenance. However, with respect to the organizational aspect, the PMH water quality monitoring system has not been sufficiently developed. Moreover, there have been concerns about the financial aspects, such as the status of DREA's budget and the status of reserve funds for operation and maintenance expenses in some villages. Therefore, the sustainability of the project is fair.

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

4.2 Recommendations

4.2.1 Recommendations to the Executing Agency

(1) Establishment of the Monitoring System of PMH Water Quality

There is no system in place for monitoring PMH water quality. It is required to clarify which organization is responsible for conducting water quality testing and to then set aside a budget for regular testing in order to ensure a consistently safe water supply.

(2) Ensuring the Budget for the Maintenance of PMH

DREA needs to secure a budget for conducting activities related to the training for maintenance personnel and the provision of technical assistance to communes on an ongoing basis, even after the completion of PROGEA II.

4.2.2 Recommendations to JICA

None

4.3 Lessons Learned

The synergies of the implementation of the Soft Component and the Technical Cooperation Projects

Operation rate of PMH constructed under the project is high, and the operation and maintenance of PMH can be described as having a good status. One reason for this may be that the capacity of maintenance personnel and that of the executing agency was both strengthened through the Soft Component and the Technical Cooperation Projects. Specifically, during the

implementation of the project, training for maintenance personnel was carried out through the Soft Component. Moreover, after the completion of the project, technical assistance was provided to executing agency to develop its capacity to monitor maintenance personnel's activities through the Technical Cooperation Projects in the regions covering this Grant Aid Project's target area. These collaborations are thus considered to have contributed to the project's high performance in terms of effectiveness and impact.

The Soft Component and the Technical Cooperation Projects have also strengthened stakeholders' capacity as well as the organizational capacity of the AUE that are responsible for the operation and maintenance of PMH while flexibly adapting to the institutional revisions of REFORME. This can be considered to have contributed to the sustainable operation and maintenance of the PMH that were constructed under the project.

It can be said that the combination of the Grant Aid Project, the Soft Component, and the Technical Cooperation Projects is expected to exert synergies that increase the project's effectiveness, impact, and sustainability. In particular, when the project is implemented during the transitional period of the water supply system of operation and maintenance, as in the case of this project, it is effective to provide technical assistance to smoothly and flexibly respond to the system transition.