Ex-Ante Evaluation Paper (for Japanese ODA Loan)

South Asia Division 1, South Asia Department, JICA

1. Name of the Project

Country: India

Project: Madhya Pradesh Rural Water Supply Project

Loan Agreement: March 27, 2020

2. Background and Necessity of the Project

(1) Current State and Issues of the Water Supply Sector in India

Although the Ministry of Water Resources, Government of India aims to "establishing access to drinking water for the entire population of India" in National Water Policy formulated in 2012 and has promoted the development of water supply facilities throughout the country, the development of water resources and construction of water supply facilities have not caught up with the increase in potable water demand caused by population increase and economic development. In India, the percentage of households where water is supplied through pipes is about 70.6% in urban areas (2011 Census of India), while that percentage in rural areas is only about 30.8% (same census). Thus, construction of water supply facilities lags behind in rural areas. The Department of Drinking Water and Sanitation, Ministry of Rural Development therefore started National Rural Drinking Water Program in 2009 and has promoted the development of water resources and water supply facilities, aiming to supply safe and sufficient drinking water to all residents in rural areas. In addition, Three Year Action Agenda 2017/18 to 2019/20, a national development plan published by NITI Aayog in 2017, also mentions construction of water supply facilities in rural areas as an especially important issue and emphasizes the necessity of stable implementation of the above program. Moreover, Modi's second government, inaugurated in May 2019, organized departments relating to water resources into the newly established Ministry of Jal Shakti to unitarily manage water resources and water supply in India. The Ministry of Jal Shakti reorganized the National Rural Drinking Water Program into the newly started Jal Jeevan Mission in August of the same year, aiming to supply potable water to all households in rural areas of India through pipes by 2024.

The state of Madhya Pradesh, the target area of the Madhya Pradesh Rural Water Supply Project (hereinafter referred to as the "Project"), has a population of about 73.00 million (2011 Census of India). The percentage of piped water supply is 9.9% in rural areas of the state (same census), which is significantly lower than the 30.8% in the whole rural areas of India (same census). The state is one of six states where such connection rates are lower than 10%. Although the state currently depends on

groundwater for 98% of resources of drinking water, including that for house connection supply, it is considered difficult to supply water stably for a long time because the lowering of the groundwater level due to over-extraction has been observed. On top of that, groundwater in 32 of the 51 districts of the state contains fluoride originating from nature exceeding the WHO standard (1.5 mg/L), salt, nitric acid and others, and cases of fluorosis and other water-related diseases have been reported. In 2015, 880,000 onset cases of dysentery, cholera and other waterborne diseases were reported as a result of groundwater contamination by bacteria originating from feces of domestic animals and others.

In this situation, the urgent issue of the state is to improve the health conditions and living environment of its residents through the construction of water supply facilities taking water from a dam or other surface water and the development of water supply networks. In 2013, the state formulated the Madhya Pradesh Vision 2018, aiming to increase the number of residents who can receive piped water supply in rural areas, and to gradually shift water resources from groundwater to surface water.

The Project, which aims to develop water supply facilities taking water from surface water in rural areas of the state, is ranked as an important project in these development plans.

(2) Japan and JICA's Water Supply Sector Policy and the Positioning of the Project

In Country Assistance Policy for India (March 2016), Japan designates "assistance for sustainable and inclusive growth" as a priority area and ranks assistance in the field of water supply as part of the countermeasures against environmental problems and climate change. In addition, the JICA Country Analysis Paper for India (March 2018) states a "program for improving basic social services" in "assistance for sustainable and inclusive growth," which is one of the priority areas, and plans to provide support for achieving the sustainability of Indian economic growth, whose benefits are equitably shared throughout society. The Project is consistent with these policies and analyses.

The necessity to support the implementation of the Project is high because it will contribute to the SDGs Goal 6 (Ensure availability and sustainable management of water and sanitation for all) and Goal 3 (Ensure healthy lives and promote well-being for all at all ages).

(3) Other Donors' Activities

The World Bank has provided support through, for example, the Punjab Rural Water Supply and Sanitation Project (approved in 2015, USD 354 million). The Asian Development Bank has implemented the Tamil Nadu Urban Flagship Investment Program-Tranche 2 (approved in 2019, USD 206 million), which aims to support the development of water supply and others in urban areas of the state of Tamil Nadu.

The state of Madhya Pradesh has decided to implement a total of nine rural water supply projects (estimated project cost: about USD 670 million) with support from the New Development Bank (NDB), and five of the projects have already started. The target areas of these projects are nine districts mainly located in the central and eastern parts of the state, which are different from, and do not overlap with, the planned area of the Project.

3. Project Description

(1) Project Objective

The objective of the Project is to provide sustainable and safe water supply in three Northwest districts of Madhya Pradesh State by constructing water treatment plants and related facilities including Functional Household Tap connection to rural households, thereby contributing to the improvement of health condition and living environment of residents in the area.

(2) Project Site / Target Area

Three districts in northwestern Madhya Pradesh (Mandsaur, Neemuch and Ratlam)

Scheme 1 (East) target area: A total of 807 villages of five blocks of Mandsaur district (118 villages of Malhargarh block and Mandsaur block are included in Scheme 1 (East)) and one block of Ratlam district

Scheme 2 (West) target area: A total of 890 villages of three blocks of Neemuch district and two blocks of Mandsaur district (257 villages of Malhargarh block and Mandsaur block are included in Scheme 2 (West))

(3) Project Components

a) Construction of water supply facilities: two intake facilities (intake tower method, 254,000 m^3 per day in total), raw water transmission pipelines (about 32 km in total), two water treatment plants (245,000 m^3 per day in total), 11 pump stations, 14 master balancing reservoirs, transmission pipelines (about 2,409 km), 511 distribution reservoirs, distribution pipelines (about 7,981 km), house connections and others

b) Capacity development of community and enlightenment activities by NGOs: The implementation of activities for supporting the formation of Village Water Sub-Committee (hereinafter referred to as the “VWSC”) and for enhancing the organization (such as the establishment of a fee collection system and enlightenment activities for promoting house connection), the implementation of publicity activities, and others

c) Consulting services: Facilities basic design, bidding assistance, construction supervision, enhancement of the executing agency’s institutional capability, promotion of implementing environmental management plans and environmental monitoring programs, and others

(4) Estimated Project Cost

65,484 million yen (of which, the ODA Loan amount is 55,474 million yen)

(5) Schedule

April 2020 - March 2028 (96 months in total) The Project will be completed when capacity development of community and enlightenment activities end (March 2028).

(6) Project Implementation Structure

1) Borrower: President of India

2) Guarantor: N/A

3) Executing Agency: MP Jal Nigam Maryadit (hereinafter referred to as "MPJNM")

4) Operation and Maintenance System: In the Project, the DBO (Design Build Operation) method is applied to the operation and maintenance of most of the facilities, including raw water transmission pipelines, water treatment plants, transmission pipelines and distribution networks in each village. The same contractors implement the design and construction of facilities, and their operation and maintenance for ten years after they are put into service; and MPJNM supervises that implementation.

(7) Collaboration with Other Schemes and Donors

1) Japan's Assistance Activity

N/A

2) Other Donors' Assistance Activity

N/A

(8) Environmental and Social Consideration / Cross-Sectoral Issues / Gender Category

1) Environmental and Social Consideration

① Category: B

② Reason for Categorization

It is considered that the Project is not located in a sensitive area, nor has sensitive characteristics, nor falls into sensitive sectors under JICA Guidelines for Environmental and Social Considerations (published in April 2010), and its potential adverse impacts on the environment are not likely to be significant.

③ Environmental Permit

It is not required to prepare an environmental impact assessment (EIA) report on the Project under the domestic laws of India.

④ Anti-Pollution Measures

During construction, mitigation measures, such as water sprinkling, leachate treatment and the restriction of working hours, are planned to be taken in order to meet the domestic emission criteria and environmental criteria of India in terms of air quality, the water quality of water resources, noise and others.

Waste and other matter will be collected, carried and disposed of upon set up in compliance with domestic procedures.

⑤ Natural Environment

The target area of the Project is located near the Gandhi Sagar Wildlife Sanctuary, and part of the facilities, such as service reservoirs and distribution pipelines, and villages to which water is distributed, are located in the Eco-sensitive Zone (ESZ) around the sanctuary. Because it is necessary to obtain a permit in order to implement a project in the ESZ under the domestic laws of India, construction works can be started after obtaining the permit from the Ministry of Environment, Forest and Climate Change of the Central Government of India. The permit has already been applied and it is expected to be obtained around June 2020 because such acquisition usually takes 135 to 150 days. No opposite opinion has been given since stakeholder discussions were held with residents.

⑥ Social Environment

The Project requires a land acquisition of 1,590 m^2, and procedures for the acquisition will be implemented in accordance with domestic procedures and JICA Guidelines.

⑦ Other / Monitoring

During construction, MPJNM and consultants monitor air quality, water quality at intake points, waste, noise, ecosystems, land acquisition and other matters every week, month or quarter. For two years after the completion of construction, MPJNM monitors waste and other matters every month.

2) Cross-Sectoral Issues

① Projects related to the countermeasures against climate change

The Project makes it possible to secure water resources stably without being affected by estimated rainfall change caused by climate change, is expected to reduce the risk of an adverse effect by climate change, and therefore contributes to adaptation to climate change.

② Countermeasures against infectious diseases, such as AIDS/HIV:

Because many workers are engaged in the Project, the HIV infection risk is presumed to be high. Thus, in order to prevent HIV infection risk during construction work, HIV/AIDS prevention provisions are included in bidding documents, and contractors are required to cooperate in HIV/AIDS prevention measures for workers. In addition, enlightenment activities to encourage residents to use groundwater and surface water for different purposes through NGOs' activities is planned, in order to prevent water-related diseases and waterborne diseases which are caused by directly drinking groundwater.

③ Participation-type development

VWSC, which consists of representatives chosen by residents, needs to know whose houses are connected to water supply and collect water tariff from those people. In the Project, formation of VWSC is supported, training on operation is provided, and thereby participation of beneficiaries is promoted.

3) Gender Category: ■GI (S) (Gender activity integration project)

<Classification Rationale> Because, in each ward (area unit consisting of 200 people on average) of each village located in the target water supply area, one man and one woman will be chosen as members of the VWSC of the village (that is, half of its members will be women) in order to reflect their opinions in VWSC management.

(9) Other Important Issues: N/A

4. Target Outcomes

(1) Quantitative Effects

1) Outcomes (Operation and Effect Indicators)

Indicator	Baseline* (Actual value in 2019)	Target (2030) [2 Years after Project Completion]
Operation Indicators		
Water supply amount by the project (m3/day)	—	96,634 (Scheme 1) (East) 92,296 (Scheme 2) (West)
Number of VWSCs established	—	726 (Scheme 1) (East) 801 (Scheme 2) (West)
Percentage of the samples meeting the drinking water quality standard (Residual chlorine) at a tap of the household (%)	—	100
Female ratio of VWSC members (%)	—	50
Effect Indicators		
Number of Household connection	—	203,441 (Scheme 1) (East) 192,928 (Scheme 2) (West)
Water tariff collection rate from VWSCs (%)	—	85

* Since all facilities are newly established, no baseline can be set in the Project.

In the Project, endline survey is planned to be carried out by NGOs about one-and-a-half years after construction of distribution network is completed (September 2026), and the completion of the survey is defined as the project completion. Construction of household connection will continue after the completion of distribution network and until project completion.

2) Impact

As to the number of cases of waterborne diseases in each household, the amount of paid medical expenses, the number of schools having usable toilet facilities, and

others, baseline survey before the commencement of water supply and endline survey one year after that commencement will be carried out through community activities by NGOs.

(2) Qualitative Effects

The improvement of health conditions and living environment of residents through safe and stable water supply, and the enhancement of operation and maintenance ability of the executing agency

(3) Internal Rate of Return

According to the following preconditions, the Project's Economic Internal Rate of Return (EIRR) will be 13.5%. In this regard, because sufficient income to cover project costs and operation/maintenance costs cannot be expected from the Project, the Financial Internal Rate of Return (FIRR) is not calculated.

[EIRR]

Cost: Project costs and operation/maintenance costs (both excluding tax)

Benefit: Willingness to pay, expenses relating to alternative water resources, which will be reduced by the Project, and the reduction of medical expenses due to lower rates of water-related diseases and waterborne diseases

Project Life: 35 years

5. External Factors and Risk Control

(1) Preconditions: N/A

(2) External Factors: N/A

6. Lessons Learned from Past Projects and Application to the Project

From the results of ex-post evaluation (FY 2012) on the Rural Water Supply Project (I) and (II), an ODA loan project in the Republic of Tunisia, it is considered that, because enlightenment activities for residents and support for irrigation associations were provided effectively, and water-supply systems hardly broke down nor stopped working, the ability of irrigation associations of the project's target area became higher than those of other areas of the country, and residents' satisfaction for water supply services also became higher, and thereby the water cost recovery rate was high. Also, from the results of ex-post evaluation (FY 2014) on the Rural Water Supply and Sanitation Project (V), an ODA loan project in the Republic of the Philippines, it is learned that because there were cases where residents who received training in preparation for the establishment of water supply associations lost motivation due to a delay in the construction of real facilities, it is desirable to match the timing of training for residents with that of the construction of facilities.

In the Project, it is planned to raise awareness of the necessity of establishing

VWSC in each village and of house connection supply through activities by NGOs employed by MPJNM, integrally promote the establishment of a water tariff collection system and house connection supply and improve the water tariff collection rate in the Project. In addition, cooperation of consulting service and NGOs in supervising the progress of the Project will be managed so that there will be no large time lag between preliminary dissemination to residents in each village and the construction schedule.

7. Evaluation Results

The Project is consistent with the development issues and development policies of India, and with the cooperation policies and analyses of the Government of Japan and JICA, contributes to the improvement of health conditions and living environment of residents in the target area through the development of water supply networks in the nine target towns of three districts, and also contributes to the SDGs Goal 6 (Ensure availability and sustainable management of water and sanitation for all) and Goal 3 (Ensure healthy lives and promote well-being for all at all ages). Therefore, the necessity to support the implementation of the Project is high.

8. Plan for Future Evaluation

(1) Indicators to be Used

As indicated in sections 4. (1) to (3).

(2) Timing of the Next Evaluation

Two years after the project completion.

End