

Ex-Ante Evaluation (for Japanese ODA Loan)

South Asia Division 1, South Asia Department, JICA

1. Name of the Project

Country: India

Project: Project for the Setting-up of All India Institute of Medical Sciences
Madurai

Loan Agreement: March 26, 2021

2. Background and Necessity of the Project

(1) Current State and Issues in the Health Sector/in Tamil Nadu, India

In India, there is a serious shortage of medical human resources and there is just 0.86 doctors per 1,000 population (WHO, 2018), falling below the World Health Organization recommended level of at least 1 doctor per 1,000 population. One of the reasons for the shortage of doctors is a shortage of medical education and research institutions. According to the Ministry of Health and Family Welfare (hereinafter “MoHFW”), there are about 554 medical universities in the country with an annual enrollment capacity for Bachelor of Medicine courses of about 80,000 students (MoHFW, 2019), but this is not a sufficient number to educate enough doctors to satisfy demand for medical service due to the rapid population growth in India. The government of India (hereinafter “GoI”) is developing medical universities in the country from 2012 to 2021 to increase enrollment capacity by 4,000 students per year. This shortage of medical human resources all over India has led to an insufficient distribution of medical human resources in the public health sector particularly in primary and secondary health care institutions, where the salary is relatively low compared to private medical institutions. In addition, there are issues such as inadequate facilities and equipment. These issues have led to a lack of adequate quality medical services. As a result, middle/low-income patients that are not able to visit private medical institutions with high medical costs still have to rely on public medical services. However, these patients are not able to receive adequate medical services at public primary and secondary health care institutions due to the serious shortages of both medical human resources and equipment and this has led to excessive congestion of patients in tertiary health care institutions. Patients who want to receive adequate medical treatment at the limited number of tertiary health care institutions are forced to travel long distances to visit the hospital and to encounter problems such as long waiting times due to the extreme congestion of patients, causing issue such as delays

in the provision of medical treatment to patients in need of advanced medical care which only tertiary health care institutions can provide. Given such challenges, it is extremely difficult to achieve Universal Health Coverage (hereinafter “UHC”) where all individuals and communities can receive the health services they need.

In order to address this situation, GOI implemented the “Prime Minister’s Health and Safety program (Pradhan Mantri Swasthya Suraksha Yojana, hereinafter “PMSSY”) starting in 2003, aiming to improve access to advanced public medical services and the quality of public health care, to correct regional disparities and to establish international standard medical universities and educational institutions. GOI is constructing the “All India Institute of Medical Sciences” (hereinafter “AIIMS”) nationwide in selected areas in which access to medical care is limited. AIIMS is a public medical institution which has three aspects (1) function of providing the highest level medical services in the country, (2) function of educating 4,000 like doctors and nurses every year, and (3) function of medical study and research. The first AIIMS was established in Delhi in 1956 and there about 4 million outpatients annually from all over the country can receive international standard medical services with affordable prices considering the income level of each patient. In addition, AIIMS is carrying out cutting-edge medical education and research. PMSSY set AIIMS Delhi as a reference institution for other AIIMS and plans to establish AIIMS in 23 locations nationwide as regional centers for clinical studies and advanced medical research in community health care in addition to regional centers for medical human resource development. As of 2021, seven new AIIMS have been established and are in operation. AIIMS is expected to not only provide advanced medical services, share knowledge from medical research and supply medical human resources as an educational institution, but also work with the state government and tertiary hospitals in the region, enhancing the capacity of regional medical systems through direct human resource distribution such as the dispatch of medical interns and medical students as part of internship programs etc. to primary and secondary health care facilities.

The state of Tamil Nadu, one of the planned states for the establishment of a new AIIMS under PMSSY, has a population of about 72 million (2011 Census) and it is one of the most urbanized states in the country. As the urban population grows in cities such as Chennai in Tamil Nadu, the low income population is also increasing and the low income population is reaching about 20% of the total

urban population or 7.3 million. This has led to the same problems of patient congestion and dysfunction in public tertiary health care institutions as observed around the country. In particular, the second largest city in the state, Madurai (population of about 1 million, 2011 Census), where the new AIIMS will be established only has one tertiary medical institution, Rajaji Hospital, which receives middle and low income patients who are not able to access private medical services due to the high cost. However, the bed occupancy rate of the hospital is always in excess of 95% (the average in Japan is about 80%, MHLW 2019) and issues such as patient congestion and dysfunction as a public tertiary hospital can also be observed. There is also a serious shortage of medical staff in Tamil Nadu, with just 2.2 healthcare workers per 1,000 population, less than half of the standard recommended by WHO (4.5 per 1,000 population) (WHO, 2016). Many patients are forced to travel long distances and wait for a long time at the hospital etc., and they are not able to receive timely and appropriate medical services. In addition, it is considered that more patients potentially may not be receiving medical services, making it difficult to realize UHC. In this respect of COVID-19, it has seen a cumulative number of infected people in the state of about 850,000 as of March 1, making the state one of the hotspots in the South Indian region and the number of infected in the state is the fifth highest in the country. From this perspective as well, it is an urgent issue to strengthen the capacity of receiving patients, and the GOI is proceeding in newly established AIIMS with developing infectious disease wards that can also handle COVID-19.

The Project for Setting-up of All India Institute of Medical Sciences Madurai (Hereinafter “the Project”) will contribute to improving the quality of medical services including for infectious diseases such as COVID-19 and non-communicable diseases, and contribute to the development of medical personnel and the enhancement of a medical personnel supply system for the community through the construction of hospital and university facilities and the installation of related equipment enabling the provision of advanced public medical services and human resource development as well as capacity development for hospital management and the enhancement of human resource development systems through the establishment of AIIMS Madurai which will operate as a regional medical center in Tamil Nadu. The Project aims to enhance the health care system in the region and promote UHC, and it is therefore positioned as an important project for India’s health sector.

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

It is the Country Assistance Policy for India (March 2016) formulated by the Government of Japan establishes "Health and Hygiene" as a priority area and states its support for the health and hygiene sector as part of efforts to develop basic social services. In addition, the JICA Country Analysis Paper for India (March 2018) mentions the strengthening of measures against infectious disease and broadly improving direct access to health services for the poor as a one of the prioritized efforts under the "basic social service improvement program" as a part of "support for sustainable and inclusive growth". Thus, the Project is consistent with this policy and analysis.

The Project plans to develop an infectious disease ward (planned to be 150 beds), and it is also in line with some of the effort to "establish and strengthen systems for infectious disease diagnosis and treatment" as a part of the "JICA's Initiative for Global Health and Medicine" supporting Prime Minister Suga's speech at the United Nations General Assembly on September 25, 2020.

Furthermore, the Project will contribute to the achievement of Goal 3 of the Sustainable Development Goals (ensure healthy lives and promote well-being for all ages). Therefore JICA's support for the implementation of the Project is highly necessary.

(3) Other Donor's Activities

The World Bank provided support for the health sector in India with a policy that places importance in improving the quality of health care services, and as of October 2020 The World Bank has approved 11.421 billion dollars for 61 projects, including a loan project to strengthen the health system in Tamil Nadu (Phases 1 and 2: 2005-2014). The Asian Development Bank (hereinafter "ADB") has a record of implementing loan projects under the National Urban Health Mission (NUHM) with the Indian government for the purpose of improving medical care access to the poor (2015-2019).

Further, for the COVID-19 pandemic, the World Bank provided a 1 billion USD loan and the ADB separately provided a 500 million USD loan to the "COVID-19 Emergency Response and Health System Preparedness Package" announced by the Indian government as a roughly 2 billion USD health program.

3. Project Description

(1) Project Objective

The objective of the Project is to establish All India Institute of Medical Sciences

in Madurai, Tamil Nadu, as a signature medical institution in South India including both health care and medical education (i) to improve access to high quality medical services, (ii) develop healthcare professionals and researchers of high standards, thereby augmenting human resource in the region as well as across the country to contribute to universal health coverage in India.

(2) Project Site/Target Area

Madurai, State of Tamil Nadu (Population of about 1 million, 2011 Census)

(3) Project Components

- a) Construction of hospital facilities (about 900 beds) and university facilities (total number of students: about 1,500), installation of medical equipment and training equipment etc., and operation & maintenance services
- b) Consulting Services (detailed design, bidding assistance, construction supervision, hospital management and human resource capacity development and system enhancement, regional medical system strengthening, promotion of networking between Japanese and Indian medical communities, support for environmental and social consideration, etc.)

(4) Estimated Project Cost

27.690 billion yen (ODA loan amount: 22.788 billion yen)

(5) Schedule

March 2021 to May 2028 (86 months). The project will be completed upon the commencement of service of the hospital and university facilities (October 2026).

(6) Project Implementation Structure

- 1) Borrower: President of India
- 2) Guarantor: None
- 3) Executing Agency: PMSSY Division of Ministry of Health and Family Welfare
- 4) Operation and Maintenance Agency: AIIMS Madurai

(7) Collaboration with Other Schemes and Donors

1) Japan's Assistance Activities

With the ODA loan, "Tamil Nadu Urban Health Care Project" aims to promote joint training, research and cooperation between the hospital and the medical facilities established in the state (mainly secondary and tertiary health care facilities) and to strengthen the regional medical referral system. In addition, ODA loan project "The COVID-19 Crisis Response Support Loan

for Social Protection” is expected to provide synergistic effect with this project in support the Indian government’s COVID-19 response.

In addition, through the “Technical Cooperation Project on Non Communicable Diseases” to be implemented in the state, training programs are planned to be conducted in Japan for the purpose of handling the non-communicable disease issue in the state, and this is also expected to have synergistic effect with the Project. Also, a request has been received from GOI for Country-Focused Training for “Advanced Training in the field of Medical Science & Management for AIIMS-like Institutes,” requesting training to enhance the health system, hospital management, public health plans, and measures for infectious and non-communicable diseases for all AIIMS officials including at AIIMS Madurai, and this is currently being considered by the government of Japan and is expected to have a synergistic effect with the Project.

2) Other Donors’ Assistance Activities: N/A

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

1) Environmental and Social Considerations

(i) Category: B

(ii) Reason for Categorization: The Project is not located in a sensitive area, nor has sensitive characteristics, nor falls into sensitive sectors under the JICA guidelines for environmental and social considerations (April 2010), and its potential adverse impacts on the environment are not likely to be significant.

(iii) Environmental Permit: The reparation of an Environmental Impact Assessment (EIA) report for the Project is mandated by local law, and approval is expected to be obtained from the Tamil Nadu government authorities at the State Environmental Impact Assessment Authority by September 2023.

(iv) Anti-Pollution Measures: Measures such as watering to prevent dust, limitation of construction vehicle speeds and other mitigation measures will be taken during construction to ensure that the Project complies with local laws with respect to air quality, water quality, noise/vibration and waste. While in service, medical sewage will mainly be reused after processing in sewage treatment equipment, and medical waste will be separated into infectious, living tissue and sharp objects and will be

collected by a designated contractor based on local law.

- (v) Natural Environment: The target area of the Project is not part of national parks and construction will be conducted on state government property, and any undesirable impacts on the natural environment are assumed to be minimal.
- (vi) Social Environment: Given that the Project will be implemented on land wholly owned by the state government, it does not involve any acquisition of private land or the involuntary relocation of residents. It has been confirmed that there is no particular objection to the implementation of the Project from residents around the project site.
- (vii) Other/Monitoring: Contractors monitor air quality, water quality, noise/vibration, waste, etc. during construction and executing agency monitor waste, etc. when in service.

2) Cross-Sectoral Issues

- (i) Climate Change: N/A
- (ii) Poverty Response/Consideration: Access of the poor to public medical services is expected to be improved.
- (iii) Consideration for Persons with Disabilities: The facilities in the Project shall install slopes and handrails and shall be designed taking into account universal design such as allowing sufficient space in passageways and toilet design allowing the use of wheelchairs. Consideration shall also be given to appropriate measures to secure smooth movement routes from the site entrance to destination buildings, to ensure information security for the visually impaired, hearing impaired or persons with intellectual disabilities who need communication assistance, and to provide appropriate measures to deal with emergencies such as fire, disaster and infectious disease.
- (iv) Countermeasures against Infectious Diseases such as AIDS/HIV: The contractor shall take appropriate measures against AIDS infection during the construction stage. Moreover, at the time of appraisal, the executing agency agreed to a list of countermeasures (36 items) that must be taken when formulating and implementing the Project as measures against COVID-19 infections. Items include the formulation of and adherence to behavioral patterns for infection prevention and thorough implementation of contractual considerations for contractors in the event that COVID-19 infection spreads.

3) Gender Category

Gender Project ■ Gender Informed (Significant) (Gender Activity Integration Project)

Activity Description/Reason for Categorization: For the Project, it has been agreed with GOI that toilets and other facilities shall be installed reflecting the safety and gender needs of women, equality of schooling and employment opportunities shall be ensured, equipment shall be introduced based on the needs and ease of use of female healthcare professionals, and public awareness activities for communities shall be carried out for diseases that are common in women such as breast cancer.

(9) Other Important Issues: N/A

4. Targeted Outcomes

(1) Quantitative Effects

Outcomes (Operation and Effect Indicators)

| Indicator | Baseline* (2020 Actual) | Target (2030) (two years after Project Completion] |
|--|----------------------------|--|
| Bed occupancy rate (%) | 95 | 90 |
| No. of inpatients/day (people) | - | 116 |
| No. of outpatients/day (people) | - | 5,000 |
| No. of emergency patients/day (people) | - | 48 |
| No. of enrolled medical students (MBBS) (people/year) | - | 150 |
| No. of enrolled nursing college students (people/year) | - | 150 |
| Staff sufficiency rate (%) | 71 | 80 |

(*Regarding the baseline, bed occupancy rate is the figure from the only public tertiary care hospital in Madurai, Rajaji Hospital, and staff sufficiency rate is the figure from the AIIMS Delhi, the first established AIIMS in the country.)

(2) Qualitative Effects

The promotion of UHC through the strengthening of the medical system in Tamil Nadu state for non-communicable diseases and infectious diseases including COVID-19, the enhancement of the regional center function for advanced medical research and capacity development of medical human resource, and the expansion of employment of young people, including women, by strengthening the education system for doctors and nurses.

(3) Internal Rate of Return

Based on the following assumptions, the economic internal rate of return (EIRR) of this project will be 25.1%. On the other hand, given that the Project is not intended to be a for-profit project, the financial internal rate of return (FIRR) is not calculated.

[EIRR]

Costs: Project costs, operation and maintenance costs (all excluding tax)

Benefits: Reduction of medical costs for patients in private hospitals by the Project, economic growth by reducing the number of patient death, and increased lifetime income of educated doctors and nurses

Project Life: 38 years

5. Preconditions and External Conditions

(1) Preconditions: None

(2) External Conditions: None

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

From the ex-post evaluation results etc. of the “Rural Health Infrastructure Strengthening Project” in the Kingdom of Thailand (2005), the lessons were learned that it was necessary to select medical equipment after carefully determining the capabilities of hospital staff involved in operation and maintenance and the budget for operation and maintenance. In addition, from the ex-post evaluation results of the grant aid “The Project for Improvement of Anuradhapura Teaching Hospital” in the Democratic Socialist Republic of Sri Lanka (2013), the lessons were learned that in higher-level medical facility set-up projects in areas in which there is no adequately functioning referral system, if the number of mildly ill non-referral patients was expected to increase following the completion of construction, it was effective for increasing the effectiveness of this project and maintaining its impact that priority initiatives be introduced for patients in need of advanced treatment.

Under the Project, AIIMS is operated and maintained by government subsidy and until now all necessary budget has been allocated to AIIMS from the central government, but it will be necessary to keep an eye on whether this continues to be the case with the Project. Also, as a part of the consulting services provided by consultants employed at the construction supervision stage, it is planned that according to the maintenance capabilities of hospital staff and maintenance budgets, support will be provided for detailed maintenance plans to be formulated

and related training conducted for correct operation and maintenance and the selection of appropriate medical equipment. In addition, the development of a health system in cooperation with the regional medical system including a medical referral system is a role expected of AIIMS, and the initiatives of the AIIMS Madurai will be supported through the consulting services of the Project.

7. Evaluation Results

The Project is consistent with the development issues and policy of India as well as the policy of Japan and JICA. It will contribute to the improvement of medical service quality, including infectious disease control, and the enhancement of medical personnel development and the supply system in Tamil Nadu state through the construction of hospital and university facilities and the installation of related equipment for advanced medical care and human resource development, and support for enhanced hospital management and human resource development system. Moreover it will contribute to the achievement of Goal 3 of the Sustainable Development Goals (ensure healthy lives and promote well-being for all ages). Therefore JICA's support for the implementation of the Project is highly necessary.

8. Plan for Future Evaluation

(1) Indicators to be Used

As indicated in section 4 above.

(2) Timing of the Next Evaluation

Ex-Post evaluation: two years after the Project's completion

End