

Ex-ante Evaluation

1. Name of the Project

Country: India

Project: Andhra Pradesh Irrigation and Livelihood Improvement Project

(Loan Agreement: 03/30/2007; Loan Amount: 23,974 million yen; Borrower: The President of India)

2. Necessity and Relevance of JBIC's Assistance

In India, where agriculture accounts for 20% of the GDP and 60% of employment, it is necessary to boost agricultural productivity in order to increase the food supply to meet the demand of the growing population and to promote poverty reduction in rural areas. Because the amount of precipitation varies widely in India depending on the region and the season, water resource development and efficient utilization of water is indispensable for reliable, increased agricultural production. As the result of engagement in large-scale irrigation development heretofore, the percentage of irrigated area out of total cultivable area has reached 43%, and two-thirds of all agricultural production is from irrigated agriculture. However, water for agriculture remains in short supply, and in addition, agricultural productivity remains at a low level due to inefficient usage of irrigation water, inadequate support for agriculture and inadequate agriculture infrastructure.

In the 10th 5-Year Plan (April 2002 – March 2007), the Government of India advocates and is engaged in four priority issues ((1) increase in public funding on irrigation facilities and water resource management, (2) rural infrastructure development (local roads, etc.), (3) development and extension of agricultural technologies, (4) crop diversification). Furthermore, in the Common Minimum Program (May 2004), irrigation is designated as one of the top priority areas, and the goal is to complete the on-going irrigation projects within three to four years.

In JBIC's current Medium-Term Strategy for Overseas Economic Cooperation, the priority sector in assistance to India is "Rural Development Benefiting the Poor". The assistance provided by this project is consistent with this strategy.

In Andhra Pradesh in southern India, the importance of agriculture in the state economy is high, with 65% of the working population engaged in agriculture and with agricultural production accounting for 20% of the gross state domestic product. The state government allocates approximately 50% of the state budget to the irrigation sector and is actively conducting new construction of large and medium irrigation facilities. However, the irrigation ratio, at only 33.7%, is lower than the national average. In particular, in areas not suited to large-scale irrigation development, agriculture is still forced to depend on rainwater. Moreover, aging of existing irrigation facilities is progressing, such that water is not delivered to the tail ends of the facilities and reliable agricultural production is difficult. Consequently, this is a project to install irrigation facilities in rain-fed areas and to improve existing facilities, and thus this project is highly necessary and relevant. Furthermore, Andhra Pradesh is a state that is advanced in irrigation sector reform that focuses on improving management capacities for irrigation facilities, and so by promoting this reform through strengthening the capacities of Water Users' Associations, it may be anticipated that this project will become a model for other states.

3. Project Objectives

The objective of this project is to raise agricultural productivity and water management capacities through construction of minor irrigation facilities, rehabilitation of medium irrigation facilities, capacity building of operation and maintenance setup, and spread of farming technologies, in the state of Andhra Pradesh in southern India, thereby contributing to the increase of farm income and the alleviation of poverty.

4. Project Description

(1) Target Area

State of Andhra Pradesh

(2) Project Outline

- (a) New construction and rehabilitation of irrigation facilities (irrigation tanks and canals)
- (b) Formation and capacity building of Water Users' Associations (including farming assistance and assistance for the poor)
- (c) Assistance with sector reform (capacity building of Water Users' Associations at the state level and strengthening of departments and organizations related to irrigation)
- (d) Consulting services (detailed design, bidding assistance, construction management, etc.)

(3) Total Project Cost/Loan Amount

28,672 million yen (Yen Loan Amount: 23,974 million yen)

(4) Schedule

February 2007 – March 2013 (74 months)

(5) Implementation Structure

- (a) Borrower: The President of India
- (b) Executing Agency: Irrigation & Command Area Development Department, Government of Andhra Pradesh
- (c) Operation and Maintenance System: Water Users' Associations

(6) Environmental and Social Consideration

(a) Environmental Effects/Land Acquisition and Resident Relocation

(i) Category: B

(ii) Reason for Categorization

This project is classified as Category B because it was determined that the project will not have any significant undesirable impact on the environment given that the characteristics of the sector is not likely to exert impact, and the characteristics of the region make it unsusceptible to impact, based on the "Japan Bank for International Cooperation Guidelines for Confirmation of Environmental and Social Considerations" (established April 2002).

(iii) Environmental Permit

The EIA report is not required for the project in the country's legal system.

(iv) Anti-Pollution Measures

No particular adverse impact on the environment is expected because the executing agency

will conduct appropriate guidance when agricultural chemicals and fertilizers are used.

(v) Natural Environment

Adverse impact on the natural environment is expected to be minimal because the project is not located in or around sensitive areas, such as national parks, etc.

(vi) Social Environment

This project requires the acquisition of 1,950 ha of land, and so acquisition procedures are proceeding in accordance with the domestic procedures of India. The project requires no resettlements.

(vii) Other/Monitoring

The executing agency, etc., will monitor water quality and land acquisition, etc.

(b) Promotion of Poverty Reduction

This project will assist an improvement in the livelihoods of the poor, including landless farmers, by hiring for construction and rehabilitation of irrigation facilities, holding training in farming technology, and construction of washing steps and cattle basins.

(c) Promotion of Social Development (e.g. Gender Perspective)

- Participatory Irrigation Management will be promoted by holding trainings in facility management and roles of Water Users' Associations, etc., in addition to increasing the ownership of the beneficiaries by encouraging their participation from the planning stage of the project.
- In the activities of the Water Users' Associations and the above-mentioned measures for promotion of poverty reduction, consideration will be given to reflection of women's needs by arranging an environment which makes it easy for women to participate, including creation of opportunities to hear the opinions of women's groups and holding of training specifically for women.

(7) Other Important Issues

None

5. Outcome Targets

(1) Evaluation Indicators (Operation and Effect Indicator)

Indicator	Baseline (2005)		Target (2015, 2 years after completion)	
	Minor irrigation	Medium irrigation	Minor irrigation	Medium irrigation
Area benefited by the project (ha)	17,817	48,923	35,632	69,890
Cultivated area by crops (ha)				
Paddy	3,563	38,552	7,126	52,894
Cotton	4,455	392	8,910	756
Jowar	3,252	3,136	6,504	756
Maize	1,781	784	3,561	1,889
Chili	1,781	587	3,561	1,323
Other	2,985	5,472	5,970	12,272

Collection rate of water charge (%)	-	5	70	70
Production volume of major crops (ton/year)				
Paddy	5,345	57,828	22,091	163,972
Cotton	1,114	98	3,564	302
Jowar	1,626	1,568	6,700	779
Maize	1,781	784	11,186	5,932
Chili	1,781	587	11,395	4,234
Yield of major crops per unit area (ton/ha)				
Paddy	1.50	1.50	3.10	3.10
Cotton	0.25	0.25	0.40	0.40
Jowar	0.50	0.50	1.03	1.03
Maize	1.00	1.00	3.14	3.14
Chili	1.00	1.00	3.20	3.20
Gross annual average farm income (Rs/year/household)	12,692	12,692	22,000	22,300

(2) Internal Rate of Return

Economic Internal Rate of Return (EIRR): 16.9%

- (a) Cost: Project cost (excluding tax), operation and maintenance expenses
- (b) Benefit: Increase in agricultural production
- (c) Project Life: 30 years

6. External Risk Factors

None

7. Lessons Learned from Findings of Similar Projects Undertaken in the Past

From ex-post evaluations of past irrigation projects, it has been learnt that post-completion operation and maintenance strongly affect the realization of the project's effects, and so it is necessary to supervise the project formation and implementation, with consideration for the establishment of the operation and maintenance setup. In this project, sustainability will be ensured by encouraging participation of the beneficiaries from the planning stage and by including components designed to strengthen the capacities of Water Users' Associations, which conduct operation and maintenance, and of the executing agency, which supports the Water Users' Associations.

8. Plans for Future Evaluation

(1) Indicators for Future Evaluation

- (a) Area benefited by the project (ha)
- (b) Cultivated area by crops (ha)
- (c) Collection rate of water charge (%)
- (d) Production volume of major crops (ton/year)
- (e) Yield of major crops per unit area (ton/ha)
- (f) Gross annual average farm income (Rs/year/household)
- (g) Internal rate of return: EIRR (%)

(2) Timing of Next Evaluation
After project completion