

1. Name of the Project

Country: Republic of India

Project: Jharkhand Horticulture Intensification by Micro Drip Irrigation Project

Loan Agreement: March 31, 2016

Loan Amount: 4,652 million yen

Borrower: The President of India

2. Background and Necessity of the Project

(1) Present State of Development and Problems of the Agriculture and Irrigation Sector in India

Agriculture sector in India has declined its share in GDP every year from 28.5% in 2000 to 13.9% in 2013 (Ministry of Agriculture, Department of Agriculture & Cooperation Directorate of Economics & Statistics). Around 46% of the national land, however, have been utilized as agricultural land, and nearly 70% of the population remain to reside in rural areas, with around half of its work force being engaged in agriculture. Therefore, agricultural and rural development is essential for balanced social and economic development as well as poverty reduction in India. Nevertheless, agricultural productivity tends not only to be subject to rainfalls during rainy seasons, but also to floods and droughts caused by either uneven or instable rainfalls and other factors due to the recent climate change, since it is difficult to secure stable water resources because of seasonal fluctuations of river water quantity. In addition, Indian agriculture sector (irrigation) accounts for 83% of the total water usage. It is expected that rapidly increasing demands for urban and industrial water usage along with economic growth in the coming period would jeopardize the demand and supply of water resource, while water usage efficiency (irrigation efficiency) in agriculture remains at as low as 38% (Twelfth Five Year Plan (2012-2017) Faster, More Inclusive and Sustainable Growth Volume I). Furthermore, irrigation water source depends on groundwater, as excessive pumping deteriorated problems such as decline and depletion of groundwater. Accordingly, it is required to disseminate irrigation agriculture efficiently utilizing water resource for stable agricultural development. Improving both irrigation rates and irrigation efficiency will be vital for economic growth in rural areas.

(2) India's Development Policies for the Agriculture and Irrigation Sector and the Role of the Current Project

The 12th Five Year Plan (April 2012~March 2017) regards irrigation works as

one of the main pillars in its plan as the irrigation works enable to directly contribute to poor people through enhancing incomes of farmers by expanding agricultural production. In addition, the plan aims at 4% in the growth of agriculture sector, together with disseminating effective use of resources as well as sustainable technology, responding to climate change, and enhancing productivity. Especially, the plan considers the introduction of small scale irrigation to contribute to effective utilization of water resource to be a focal priority. In this regard, “Jharkhand Horticulture Intensification by Micro Drip Irrigation Project” (hereinafter referred to as “the Project”) consists to the direction in the plan.

(3) Japan and JICA's Policy and Operations in the Agriculture and Irrigation Sector in India

Japanese Country Assistance Program for India (May 2006) raised its assistance to poverty reduction as one of the prioritized fields to tackle with, and recognized the necessity to consolidate irrigation facilities for enhancing agricultural productivity as well as ensuring stable agricultural production. In addition, it articulated the necessity of realizing bottom up of rural communities as a whole through generating employment opportunities and improving their income levels. Furthermore, JICA's Country Analysis Paper for India (March 2012) provides an analysis that it is necessary to secure agricultural water through effective utilization of limited water resource as well as to enhance agricultural productivity through efficient water usage in order to increase food supply to respond to population increase and poverty reduction in rural areas. The Project consists to this direction and analysis. Among Yen Loan projects provided to India, 25 cases, equivalent to 252.9 billion yen, were approved for agriculture and irrigation sector as of March 2016.

(4) Other Donors' Activity

United Nations Development Programme (UNDP) has an achievement to install micro drip irrigation facilities as part of a project that it conducted for enhancing the livelihood in Jharkhand during the periods from 2003 to 2008 and from 2009 to 2012. The World Bank has provided its assistance to petty farmers in West Bengal Province through management of small scale irrigation facilities and strengthening residents' organizations, together with its assistance to livelihood enhancement targeting poor provinces such as Bihar and Odisha. Asia Development Bank has supported Chhattisgarh Province for improving livelihood and reducing poverty through enhancing services of irrigation facilities, encouraging farming and strengthening water management.

(5) Necessity of the Project

The target area of the Project, Jharkhand (population of 330 million), is blessed with its geographical features and climate characteristics which enable diverse

horticulture products, especially vegetable cultivation. However, fluctuations in annual rainfalls are considerable, while water resource within the province is limited, with its irrigation rate remaining at as low as the national 3rd rank. In addition, 72.6% of the farmers in the province are petty farmers possessing agricultural lands of smaller than 1.0 hectare. It is necessary to enhance land productivity and profitability for increasing agricultural incomes, but limited water sources and insufficient irrigation have confined the cultivation period to only rainy seasons. As a result, cash incomes through selling surplus agricultural products such as vegetable remain quite limited. Even if agricultural products could be brought into markets, many farmers are forced to accept unfavorable conditions offered by buyers as they do not possess sufficient knowledge about marketing and are not capable of conducting appropriate transactions at suitable prices. In fact, the province's poverty rate is 36.9%, the 2nd highest at national level, and it is an urgent matter for the province to tackle with poverty reduction through promoting agriculture by effective utilization of limited water resource. The 12th Five Year Plan raised by Jharkhand Province, for the purpose of improving these situations, clarified its priorities as below:

- (i) Enhancing agricultural productivity and diversification;
- (ii) Transforming traditional monoculture production to commercial horticulture products;
- (iii) Increasing irrigated land areas through large, middle and small scale irrigation and effective utilization of groundwater; and
- (iv) Expanding the irrigated areas from 10% to 15%.

In addition, like other provinces in India, the province has shown low attendance rates of women in village councils and so on, leaving its gender development indicator to as low as 0.558 (2007), the 29th rank among 35 provinces across the country. The province is required to promote further assistance to women. The Project targets poor female farmers who are affiliated to women's voluntary group (SHG), and contributes to needs for supporting women.

Under the circumstances, the Project, which aims at enhancing productivity of horticultural products as well as livelihood of petty farmers, consists to development policies of the Government of India, as well as assistance directions and analysis of the Government of Japan and JICA. Therefore, the necessity of JICA's support for the implementation of the Project is considered to be high.

3. Project Description

(1) Project Objective

The Project intends to contribute to enhancing livelihood of small and petty farmers as well as encouraging women's social participation, through installing micro drip irrigation to the target farming households in Jharkhand Province and

providing technical support regarding horticultural cultivation and marketing, for the purpose of improving irrigation rates and irrigation efficiency, enhancing agricultural productivity, and diversifying agricultural products.

(2) Project Site/Target Area

Dumka District, Giridih District, Gumla District, Khunti District, Lohardaga District, Pakur District, Ranchi District, West Singhbhum District, and Simdega District in the state of Jharkhand

(3) Project Components

1) Assistance of agricultural facility development (introduction of drip irrigation facilities to 30,000 households, consolidating common use agricultural machinery and facilities such as farm appliances and market centers, etc.)

2) Assistance to farmers' capacity development (consolidating support system for farmers, agricultural technical support for farmers)

3) Project management structure support (structural improvement of executing agency, research activity)

4) Consulting services (procurement and fund management assistance, etc.)

(4) Project Cost

5,476 million yen (Loan amount: 4,652 million yen)

(5) Project Implementation Schedule

March 2016 – February 2023 (84 months in total). The project completion is defined as the completion of all activities commencement of the service (February 2023).

(6) Project Implementation Structure

1) Borrower: The President of India

2) Guarantor: none

3) Executing Agency: Jharkhand State Livelihood Promotion Society (JSLPS)

4) Operation and Maintenance System: the JSLPS will implement as well as monitor and maintenance of the Project.

(7) Environmental and Social Considerations/Poverty Reduction/Social Development

1) Environmental and Social Considerations

① Category: FI

② Reason for Categorization: Subproject of the Project is not identified before JICA's approval of loan under the JICA guidelines for environmental and social considerations (April 2010) and such a subproject is unlikely to have significant adverse impact.

③ Other/Monitoring: The Project envisages that the Implementing Agency, supported by consultants employed by the Yen Loan, will take necessary measures for a category that it falls in, based on domestic legal system in India and 'Japan International Cooperation Agency's Environmental and Social Consideration Guideline' which enable categorizing each sub-project.

Meanwhile, sub-projects that fall into Category A will not be implemented. If necessary, however, the Implementing Agency is required to formulate a due plan for aboriginal residents based on the aboriginal residents' framework which was agreed at the time of appraisal.

- 2) Promotion of Poverty Reduction: The Project targets petty farmers in Jharkhand, the 2nd highest province in poverty rate in India. In addition, it will implement marketing and agricultural technical support, together with drip irrigation which contributes to enhancing agricultural productivity, in order to improve livelihood of petty farmers.
 - 3) Promotion of Social Development: The Project targets SHG comprising female members and implements activities based on women's needs. Criteria for selecting target blocks include areas with high ratios of designated ethnic groups and designated castes. The Project will be implemented with consideration for socially vulnerable; when target farmers are selected, households with handicapped family members are prioritized.
- (8) Collaboration with Other Donors: It is expected to expand the target area of the Project, by assisting to secure the agricultural water for the areas where many households with no spring wells reside, in collaboration with National Watershed Management Programme (NWMP) which conducts maintenance of Check Dam under the supervision of Department of Rural Development and Mahatma Gandhi National Rural Employment Guarantee Act (MGNREGA) which constructs spring wells.
- (9) Other Important Issues: None in particular

4. Targeted Outcomes

(1) Quantitative Effects

1) Performance Indicators (Operation and Effect Indicator)

Indicators	Baseline* ¹ (actual value in 2016)	Target (2025) [2 years after project completion]
Number of farmers who benefit from drip irrigation (household)	-	30,000
Area of drip irrigation (ha)	-	3,000
Number of annual planning (number/year)	-	2
Farming period utilizing drip irrigation (number/year)	-	1
Increase rate for main product yield (%)	-	248 ^{**2}
Increase rate for gross farm return in drip irrigation installed farm per household and per year (%)	-	227

Increase rate for gross agricultural income in drip irrigation installed farm per household and per year (%)	-	233
Loan recovery rate (%)	-	90
Total amount of repaid loan (Rupee)	-	450 million
Annual average agricultural income in drip irrigation installed farm(Rupee/o.1ha)	-	32,552

* 1: Reference values are fixed after the implementation of a baseline survey targeting farmers who are selected upon the launching of the Project.

* 2: Target values were calculated based on the main products as of the present. However, there are possibilities that main products in the target areas in 2025 might be changed according to needs of farmers and markets.

(2) Qualitative Effects: Enhancement of living standards of residents, promotion of women's social participation and economic activities, and so on

(3) Internal Rate of Return: Based on the following presuppositions, the Project's economic internal rate of return (EIRR) is fixed at 15.0%. Meanwhile, since the Project does not aim at obtaining profits, financial internal rate of return (FIRR) is not calculated.

【EIRR】

Cost: Project cost (excluding tax), operation and maintenance cost

Benefit: part of agricultural income increased

Project Life: 20 years

5. External Factors and Risk Control

Deterioration of political economic circumstances as well as natural disasters in India and the target/neighborhood areas

6. Evaluation Results and Lessons Learned from Past Projects

(1) Results Similar Past Projects: An Ex-post evaluation for the Yen Loan Project "Attappady Wastland Environmental Conservation Project" in India indicated that, as one of the factors for considerable delay of the project implementation, around 4 years were required for establishing a cooperative relationship between the implementation agency and residents. Evaluation results show that, in a case of residents' participatory project, it is important to conduct sufficient surveys as to relationships between residents and governmental organizations, social situations, living environment, development needs, and so on, to confirm whether or not there are any inhibiting factors for the project implementation.

(2) Lessons for the Project: Since the Project is a participatory project involving residents, it adopts an implementing system, vis-à-vis the Project's target, to utilize SHG with which the Implementing Agency has established a cooperative relationship through other schemes in order to implement the Project smoothly. In addition, it

envisages a system which enables easily to reflect more local needs, by arranging a field manager and community resource person (CRP) who are thoroughly knowledgeable about community information, in order to avoid any disturbances for activities at community levels.

7. Plan for Future Evaluation

(1) Indicators for Future Evaluation

- 1) Number of farmers who benefit from drip irrigation (household)
- 2) Area of drip irrigation (ha)
- 3) Number of annual planning (number/year)
- 4) Farming period utilizing drip irrigation (number/year)
- 5) Increase rate for main product yield (%)
- 6) Increase rate for gross farm return in drip irrigation installed farm per household and per year (%)
- 7) Increase rate for gross agricultural income in drip irrigation installed farm per household and per year (%)
- 8) Loan recovery rate (%)
- 9) Total amount of repaid loan (Rupee)
- 10) Annual average agricultural income in drip irrigation installed farm (Rupee/o.1ha)

(2) Timing

Two years after project completion