Ex-Ante Evaluation (for Japanese ODA Loan)

South Asia Division 1, South Asia Department

Japan International Cooperation Agency

1. Name of the Project

（１） Country: India

（２） Project: The Project for Promoting Sustainable Horticulture in Haryana (I)

（３） Project Site/Target Area: State of Haryana (Total Population: about 25 million (2011))

Loan Agreement: February 20, 2024

2. Background and Necessity of the Project

（１）Current State and Issues of the Agriculture Sector and the Priority in India

In India, agriculture is an important industry, accounting for 14.6% of GDP and 60% of employment (World Bank data (2018)). In addition, due in part to productivity gains brought about by the Green Revolution that began in the 1960s, India has become a major global food producer and exporter, particularly of grains, ranking second in the world in rice and wheat production and first in rice exports (U.S. Department of Agriculture (USDA) (2021)), etc. In particular, the state of Haryana has made progress in modernizing and expanding agriculture and is now one of the leading grain producing states in the country, making grain the primary industry and producing about 15% of India's national grain (Haryana VISION 2030). On the other hand, Haryana State faces the highest risk of groundwater depletion in India, along with Punjab and other states, due to excessive water pumping for grain production, especially rice, in recent years, and the risk of groundwater depletion is considered extremely high in approximately 60% of the state. In particular, groundwater levels have dropped an average of about 6 meters and a maximum of about 25 meters in every district of Haryana over the past 40 years (1974-2014) (Haryana State Government Groundwater Review Committee), and this has become a major issue in recent years. There is a growing need to promote crop diversification into horticultural crops such as vegetables and fruits, which use relatively less water.

Against this backdrop, Government of Haryana has formulated and implemented the “Mera Pani Meri Virasat Scheme,” a crop diversification policy that encourages a shift from rice and other grain crops, which require relatively high water use and have a large environmental impact, to other crops, including vegetables, fruits, and other horticultural crops that have a relatively low environmental impact, thereby promoting sustainable agriculture. However, at

present, less than one-fifth of the farmland has been converted (about 70,000 ha, of which about 9,000 ha are horticultural crops; Haryana State Agricultural Department), compared to the target of approximately 400,000 ha to be achieved within three years from 2020. The state government has set a goal of promoting the conversion of about 30,000 hectares from rice to horticultural crops by 2030. In order to achieve this goal, it is necessary to provide technical guidance and training opportunities by agricultural extension staff, and to develop production infrastructure such as small-scale irrigation facilities, in addition to marketing support for profitable horticultural farming so that grain farmers feel incentivized to switch to horticultural crops (Preparatory Survey Report (2023)).

Haryana has a suitable climate and other growing conditions not only for grains but also for horticultural crops. Among the 28 states and 7 union territories of India, Haryana ranks first in cucumber, carrot and strawberry production, second in radish production, third in pepper and bitter gourd production, fourth in cauliflower production and fifth in muskmelon production. (Horticultural Statistics at a Glance 2018). In addition, Haryana has major development potential for horticultural agriculture focused on the urban and suburban markets, including a significant comparative advantage in terms of marketing due to its location near the Delhi metropolitan area and the accessibility of transporting produce to the market. If the value of horticultural crops can be enhanced and traded profitably in local markets in Haryana and in major consumption centers such as Delhi and its suburbs, it will become an industry that will drive the state's economy and increase farmers' incomes.

On the other hand, Haryana is currently unable to fully utilize its potential. This is due to the lack of sufficient infrastructure to control spoilage and deterioration of agricultural products during storage, refrigeration, processing, etc. and to maintain freshness, resulting in a decline in quality and unit price during the distribution process, as well as food loss due to disposal (about 5%-15% loss between harvest and delivery to market). In addition, there is a lack of infrastructure in the state with efficient logistics functions to facilitate effective collection and packaging operations to increase the volume of horticultural crop delivery and distribution, as well as standardization of specifications and quality and improved sanitary management to add value and increase unit prices.

Furthermore, in order to achieve higher incomes for farmers, it is necessary to improve farmers' ability to negotiate prices and establish a system to practice market-oriented agriculture, such as off-season farming, which increases

profitability by targeting the marginal season and selling during the high-demand period. Specifically, smallholder farmers with an operation area of 2 ha, or about 70% of farmers in Haryana (Indian Ministry of Agriculture Statistics (2018)), are unable to secure a stable quantity of crops and are not benefiting from economies of scale because they are distributing their crops to the market on their own. As a result, farmers' ability to negotiate prices with market stakeholders is low, and they do not earn sufficient income through crop sales. Therefore, it is necessary to organize farmers as producer groups engaged in corporate activities, to strengthen the capacity of farmers belonging to these groups, and to organize and strengthen the capacity of the executing agencies that support these groups, and to develop marketing strategies that contribute to improving price negotiating power.

With this as a background, the Government of Haryana launched the producer organizations in 2018 through the Crop Cluster Development Programme (CCDP), an initiative undertaken by the state government. While the organization is working to develop packhouses (equivalent to a distribution and processing center in Japan) as infrastructure for freshness and logistics functions such as collection, grading, packing, storage/chilling and processing, strengthening the financial management and marketing capacity of the producer organizations, and improving their business planning capacity, its efforts are still in progress.

The Project for Promoting Sustainable Horticulture in Haryana (hereinafter referred to as “the Project”) aims to promote sustainable agriculture and increase the income of the target farmers by promoting the marketing of horticultural products through the diversification of horticultural crops such as fruits and vegetables and the development of facilities and capacity building for value chain promotion, and it is positioned as the most important project in the agricultural sector in India.

（２）Japan's and JICA's Policy Cooperation and Operations in the Agriculture Sector (especially in relation to key foreign policies such as the Free and Open Indo-Pacific Partnership (FOIP))

Country Assistance Policy for India (March 2016), formulated by the Government of Japan, stipulates “supporting sustainable and inclusive growth (income generation programmes for the poor)” as one of the priority areas. The JICA Country Analysis Paper for India (March 2018) also identifies “inclusive rural growth” as one of the development challenges, and analyzes the need to increase farmer’s income by improving agricultural productivity. In addition, The JICA

Global Agenda (JICA's Strategies for Global Developmet) 5. Agriculture and Rural Development (Sustainable Food Systems) states that the project aims to increase farmers' income by stimulating agriculture and related industries (processing, distribution, etc.), and the Project is in line with these policies and analyses. Furthermore, from the perspective of food security, this Project is consistent with one of the Pillars of the "Free and Open Indo-Pacific" initiative, "Addressing Challenges in an Indo-Pacific Way".

（３）Other Donors' Activities

The World Bank has supported the development of a horticultural training facility in Haryana State in 1998. In addition, Israel is supporting the development of research and cultivation facilities in Haryana, including a testing center, based on the Indo-Israel Work Plan agreed with the Government of India in 2006.

3. Project Description

（１）Project Description

① Project Objective

The project aims to contribute to the socio-economic development of the state of Haryana by supporting crop diversification into horticultural crops such as fruits and vegetables, and by improving facilities and strengthening capacity to promote the value chain, thereby promoting sustainable agriculture and increasing the income of the target farmers by promoting sales of horticultural crops.

② Project Components

１） Support for crop diversification into horticultural crops (strengthening the capacity of producer organizations and farmers' groups (support for the formulation of project plans, support for the establishment of a joint delivery system, etc.), promotion of water-saving horticulture (development of small-scale irrigation systems, etc.), strengthening of farmers' production systems (training for the formulation of "farming as a business" plans, etc.).

２） Support for value chain development (development of packhouses, data linkage infrastructure (e-marketplace, inventory management system, etc.), promotion of private sector collaboration (implementation of pilot projects such as for matching between private companies and producer organizations, etc.)

３） Strengthening the organizational structure of the state government: strengthening the functions of the Project Management Unit [PMU]

(training, equipment provision, etc.), strengthening the expansion system of the “faming as a business” model (training, etc.), formulation and implementation of marketing strategies (support for the formulating the strategy), etc.)

4） Consulting services: detailed planning support, bidding assistance, construction supervision, support for strengthening the organizational structure, implementation of various surveys such as market research, support for promoting private-sector collaboration, support for formulating data infrastructure development strategies, support for environmental and social considerations, etc.

③ Project Beneficiaries (Target Groups)

Direct beneficiaries (number of farmers using the developed packhouses: about 44,000; and number of farmers eligible for capacity building: about 112,000)

Final beneficiaries (number of consumers who will benefit from value-added horticultural products through value chain promotion: about 52 million)

（２） Estimated Project Cost

47,921 million yen (Japanese ODA loan: 16,215 million yen)

（３） Schedule (Cooperation Period)

February/2024-January/2033 (108 months)

Completion of all activities (January 2033) is considered completion of the Project.

（４） Project Implementation Structure

１） Borrower: President of India

２） Guarantor: N/A

３） Executing Agency: Department of Horticulture, Government of Haryana (hereinafter referred to as “DoH”)

４） Operation and maintenance system:

The PMU will take the lead during implementation and the DoH will operate and maintain the project after completion, while the organization in charge of each project content will be responsible for operation and maintenance management. Specifically, among the facilities to be developed through the project, the operation and maintenance of the packhouses will be carried out by the producer organizations (however, the operation and maintenance of the large-scale packhouses will be outsourced to the private sector). Capacity building for this purpose will be conducted through the Project, and the producer organizations

will pay for operation and maintenance costs from the investment and sales proceeds by their members. In addition, the DoH will take over from the PMU to provide support for capacity building of producer organizations etc. after the completion of the Project, but there are no particular concerns about the technical aspects of the Project since the DoH will be involved in the PMU work from the implementation stage and will also support it with consulting services. There are no particular financial concerns as the Haryana State Government Finance Department has already confirmed that budget allocations will be made for the necessary operation and maintenance costs required including for the packhouses.

（５） Collaboration and Sharing of Roles with Other Donors

１） Japan's Activities: None

２） Other Donor’s Activities: None

（６） Environmental and Social Consideration

① Category: FI

② Reason for Categorization:

The Project cannot identify subprojects before JICA's loan approval under the "Japan International Cooperation Agency (JICA) Guidelines for Environmental and Social Considerations" (issued in January 2022), and such subprojects are expected to have environmental impacts.

③ Other/Monitoring

Under the Project, the executing agency, with the assistance of the Japanese ODA Loan consultants hired under the ODA loan project, will classify subprojects into categories based on India's domestic legal system and JICA Guidelines for Environmental and Social Considerations, and the necessary measures will be taken for the relevant category. Subprojects will not include Category A projects.

（７） Cross-Sectoral Issues

① Climate change related projects

The Project is expected to contribute to climate change adaptation measure by promoting water-saving agriculture through the introduction of drip irrigation and other small-scale irrigation development, thereby reducing the risks of climate change impacts.

② Poverty measures and considerations

The Project mainly targets small and marginal farmers, including poor farmers. The specific effects of the Project on poverty reduction will be confirmed through baseline and impact surveys to be conducted after the start of the Project.

（８）Gender Category:

■GI(S) Gender Informed (Significant)

<Details of Activities/Reason for Categorization>

The gender analysis identified a gender-based challenge in that women's participation in producer organizations and training is limited due to the impact of the gender division of labor, such as time constraints due to domestic work and taking on supplementary tasks in production work. On the other hand, the cultivation of horticultural crops generally requires more labor than the cultivation of grains, and it is important to support women as the bearers of production labor. Against this background, the Project created a Gender Action Plan, which is a project plan to improve access to training opportunities related to horticultural crop cultivation, food processing, marketing, etc., mainly by promoting women's participation in producer organizations and forming producer organizations composed exclusively of women. The percentage (%) of the total number of women producers' organizations is set as an indicator. For these reasons, the Project is classified as a “gender activity integration project”.

（９） Other Important Issues: None

4. Targeted Outcomes

（１） Quantitative Effects

１） Outcomes (Operation and Effect Indicators)

Indicator	Baseline (Actual value in 2021)	Target (2035) (2 years after project completion)
Farm income in the project area (Indian Rupees)	(Note 2)	(Note 3)
Area of crop diversification area (ha) (Note 1)	-	10,500
Groundwater consumption in the project area (1,000 m^3)	141,750	43,785
Food loss rate from post-harvest to market (vegetables) (%)	9.3	3.7
Food loss rate from post-harvest to market (fruits) (%)	11.6	4.6
Horticultural crops sales results (Indian Rupees)	(Note 2)	(Note 3)

Percentage of producer organizations for women (%)	-	10

(Note 1) Refers to the area converted from rice to vegetables or fruits.
(Note 2) The baseline is defined by the results of the baseline survey conducted in the initial phase of the Project.
(Note 3) The target will be defined through detailed activity plan and baseline survey conducted by PMU in the initial phase of the Project.

２） Qualitative Effects

Mitigation of groundwater depletion, improvement of women's social and economic status, efficiency of horticultural crop transportation, etc.

３） Internal Rate of Return

Based on the assumptions listed below, the economic internal rate of return (EIRR) for the Project is 12.6%. The Project is not intended to generate business income, and the financial internal rate of return (FIRR) is not calculated.

[EIRR]
Cost: Project costs, operation and maintenance costs (all excluding taxes)
Benefit: Effects of reducing post-harvest losses and increasing profits through higher added value by promotion of horticultural crops through support for crop diversification of horticultural crops and support for value chain development.
Project Life: 30 years

5. External Factors and Risk Control

（１）Preconditions: None
（２）External Factors: None

6. Lessons Learned from Past Projects

Lessons learned from agricultural sector projects in ODA loans to India include the limited number of staff available for agricultural extension and the failure in some cases to provide adequate agricultural guidance to the target farmers. In this Project, it is necessary to secure a sufficient number of agricultural extension staff and ensure their appropriate assignment, and to establish a system to monitor the status of agricultural guidance at the Project implementation stage. In addition, in order to complement farmer guidance activities, training opportunities for farmers to share their skills and knowledge, farmer guidance by instructors from contract farming companies and farmer guidance services

provided by private Agri-tech companies will be considered as part of the support to promote private-sector partnerships.

7. Evaluation Results

This Project is in line with India's development issues and policies as well as the development cooperation policies and analysis of Japan and JICA. In addition, it is highly necessary to support this Project because it is considered to contribute to SDGs Goal 1 (End poverty), Goal 2 (Zero hunger and promote sustainable agriculture), Goal 8 (Economic growth and employment), and Goal 13 (Combat climate change).

8. Plan for Future Evaluation

（１） Indicators to be Used

As described in 4. (1) to (3).

（２） Future Evaluation Schedule

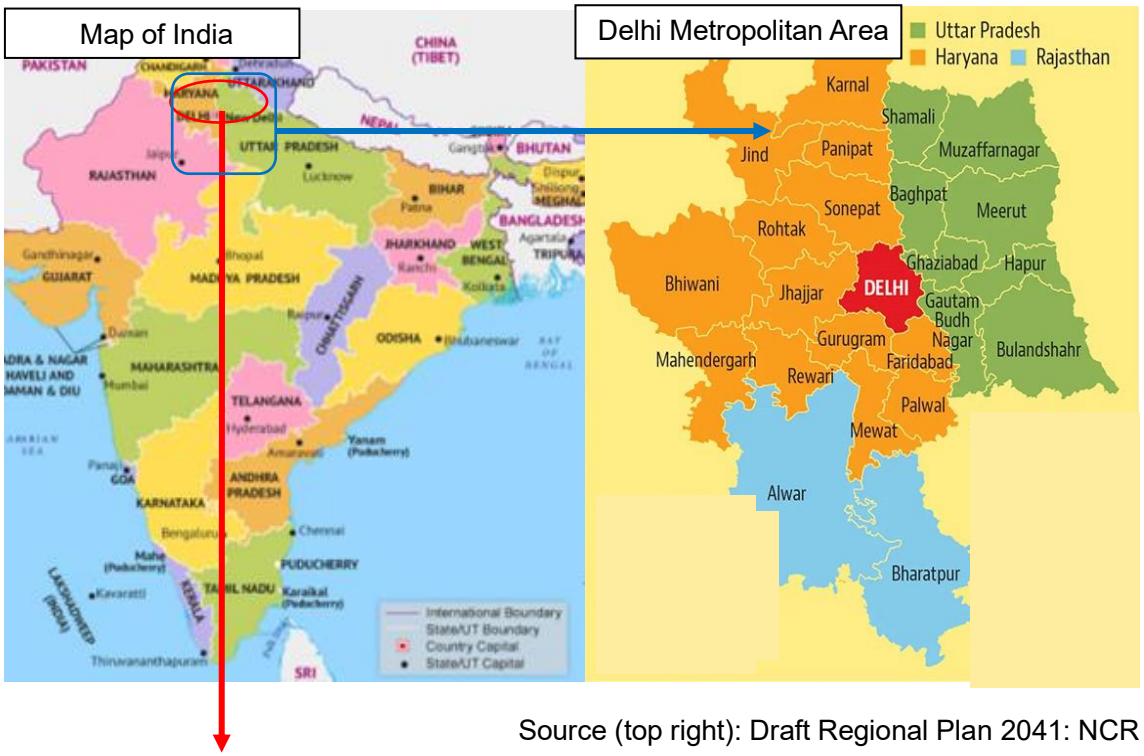
Ex-post evaluation: 2 years after the project completion

END

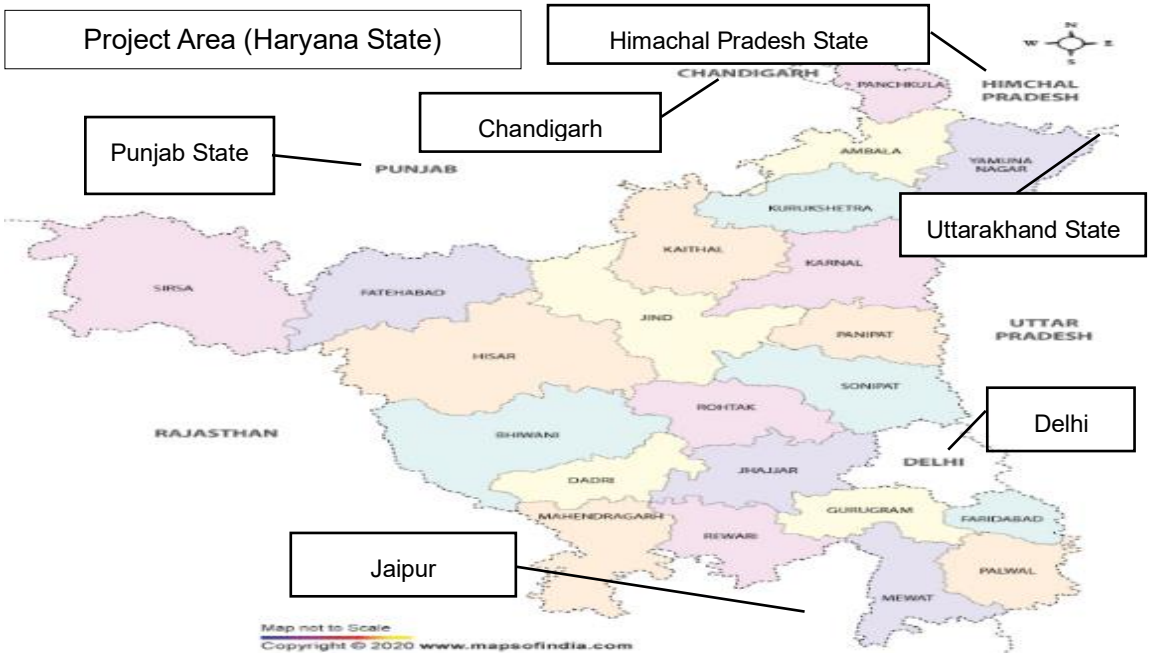
Appendix: Map of the Project for Promoting Sustainable Horticulture in Haryana (Phase I)

Appendix

Map: The Project for Promoting Sustainable Horticulture in Haryana (Phase I)



Source (top right): Draft Regional Plan 2041: NCR



Source (top left and bottom): Maps of India

(https://www.mapsofindia.com / https://www.mapsofindia.com/maps/haryana/haryana.htm)