

Summary

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1. Outline of the Project	
Country: Dominican Republic	Project title: Technology Improvement Project for Irrigated Agriculture
Issue/Sector: Agricultural Engineering	Cooperation scheme: Technical Cooperation Project
Division in charge: Agriculture Development Cooperation Dept., Agricultural Technical Cooperation Division (present Rural Development Dept. Group II (Field Crop Based Farming Area), Field Crop Based Farming Area Team I)	Total cost: 612 million yen
Period of Cooperation	March 2001 – February 2006 (5 years)
	Partner Country's Implementing Organizations: Instituto Nacional de Recursos Hidráulicos (INDRHI: Implementing partner), Secretaría de Estado de Agricultura (SEA: Cooperating partner) Supporting Organization in Japan : Ministry of Agriculture, Forestry and Fisheries
Related Cooperation	N/A
<p>1-1. Background of the Project</p> <p>In the Dominican Republic, increased agricultural production is a priority policy issue in response to the growing demand for food resulting from economic development and population growth. The National Development Strategy has established rehabilitation, O&M of irrigation facilities and facilitation of improvement in the water management system through transfer of the facilities to farmers as important policies in irrigated agriculture.</p> <p>Under such circumstances, INDRHI and SEA engaged in developing the capacity of the technical staff involved in O&M of irrigation facilities and strengthening the functions of Water User Associations (WUAs) composed of beneficiary farmers in order to improve the efficiency of irrigation. However, because of the failure to achieve the expected outputs, the Government of the Dominican Republic requested the Government of Japan for project-type technical cooperation in order to improve the technical capacities of the technical staff in O&M of water management and irrigation facilities and to strengthen the WUAs. The main site and sub-site of the Project were the Headquarters of INDRHI and the Centro Nacional de Capacitación Arrocerá (CENACA), respectively.</p> <p>1-2. Project Overview</p> <p>(1) Overall Goal Water management, O&M and cultivation techniques and skills are improved, and irrigation facilities are transferred smoothly</p> <p>(2) Project Purpose Leaders of WUA and staff of INDRHI/SEA improve their knowledge and skills in water management, O&M and cultivation through the training curriculum in the Project</p> <p>(3) Outputs</p> <ol style="list-style-type: none"> 1) Problems in the model area are comprehended and examples of technical improvements in water management, O&M and cultivation on the pilot farm are presented. 2) Training programs and materials for water management, O&M and cultivation are prepared. 3) Lecturers of the above-mentioned areas are trained. 4) Training curricula are prepared and training courses are conducted. 5) Those who attended training courses improve their knowledge and skills in water management, O&M and cultivation through the training curriculum in the Project. <p>(4) Inputs (as of completion of the Project)</p>	

Japanese side:	
Long-term experts 8 pers.	} 426 million yen
Short-term expert 5 pers.	
Trainees received 22 pers.	
Equipment 60 million yen	Local cost 91 million yen
Total 612 million yen	
Dominican Republic side:	
Counterparts 27 pers.	
Land and facilities	Project Office, CENACA, equipment storage/conference room at the pilot farm
Local cost	17,949,000 Dominican pesos (INDRHI: 14,190,000, SEA: 3,759,000)

2. Evaluation Team	
Member of Evaluation Team	Rural Development Evaluation: Masafumi Ikeno Deputy General Manager, Consulting Department III, KRI International Corp.
Period of Evaluation	6 – 23 January 2009
	Type of Evaluation: Ex-post

3. Project Performance

3-1. Performance of Project Purpose
Most of the indicators of the Project Purpose had been achieved at the time of the Final Evaluation. The confirmation study in the Final Evaluation revealed that the proportions of trainees who had introduced irrigation with a 7-day interval, water depth monitoring, gate operation and water management technologies such as management of irrigation time were 55%, 55%, 77% and 97%, respectively. These figures far exceeded the target of at least 30% of the trainees introducing the improved water management technologies. The same study revealed that 84% and 29% of the trainee farmers had also introduced the improved technologies regarding fertilizer reduction and apple snail control, respectively. These figures indicated that the target of introduction by at least 30% of the trainees had almost been achieved. A separate confirmation study conducted in May 2005 revealed that more than 80% of the technical staff of INDRHI and SEA who had taken the training had transferred the technologies to water users. This figure far exceeded the target of at least 30% of the trainees conducting technology transfer activities.

3-2. Achievement related to Overall Goal
Since the completion of the Project, the indicators of the Overall Goal have improved. In La Vega and Bonao Rice Farming Zones in the Project Area, while fertilizer input decreased from 100 - 110 pounds/tarea before project implementation to 75 - 80 pounds/tarea after the completion of the Project, the average yields increased from 4.17 and 3.85 quintal/tarea in 2001 - 2005 during project implementation to 4.68 and 4.15 quintal/tarea in 2006 - 2008 after the completion of the Project, respectively.
Improvement in the operation of the WUAs has been observed as the water user fee collection ratios of the three WUAs which constitute the WUA union in the model area have increased from 70%, 40% and 60% before project implementation to 99%, 66% and 85% after implementation, respectively.

3-3. Follow-up of the Recommendations by Terminal Evaluation Study
INDRHI has responded to the seven recommendations presented in the Final Evaluation and is engaged in improving and extending the irrigation technology extension system established in the Project throughout the country by preparing and implementing a “Sustainable Development Plan (2006-2010)” which aims at improvement in O&M of the irrigation facilities transferred to WUAs as a follow-up project after the completion of the Project.

4. Results of Evaluation

4-1. Summary of Evaluation Results

(1) Relevance
The relevance of the Project was high.
This Project which aimed to develop the human resources required in the areas of water management, support to water user organizations, facility O&M and cultivation was in line with the policies of the Government of the Dominican Republic, including the “Strategy and Mid-term Development Plan of the Agricultural and Livestock Sector 2001- 2010” established by SEA and the policies of INDRHI for “improvement in productivity in the agricultural sector through repair of the existing irrigation facilities,” “increased agricultural production in the entire nation by an increase in irrigated area” and “establishment of

an irrigation management system aimed at transfer of the management of irrigation facilities to WUAs.” Meanwhile, this Project was also in accordance with the development assistance policy of Japan since the area of agricultural development is one of the six priority cooperation areas of JICA in the Dominican Republic and establishment of sustainable agricultural production is one of the development strategies of JICA.

The technologies improved and introduced in this Project not only met the needs of the farmers in the Project Area, but also started being used by farmers in the entire country through implementation of similar projects by other donors. These facts indicate that this Project has met the needs of the beneficiaries and contributed to the smooth transfer of the irrigation facilities to the farmers.

(2) Effectiveness

The effectiveness of the Project was relatively high.

As mentioned in 3-1 above, the Project Purpose had mostly been achieved at the time of the Final Evaluation. The Project Outputs including improvement in the training curricula in water management, O&M and cultivation and improvement in the quality of the training lecturers have been adequately realized, contributing to the achievement of the Project Purpose of improving the knowledge and skills of the personnel concerned through the training and resulting in invigoration of the WUAs and improvement in water management and farming.

The important assumptions had no negative effect on the Project since the WUAs recognized the importance of the Project Purpose and continued dispatching their representatives to the model project and trainings.

(3) Efficiency

The efficiency of the Project was relatively high.

The machinery and equipment inputs and expenses for the experts were recorded in the register which clearly noted the inputs and expenses.

The adoption of not only the advanced technologies of Japan and other countries, but also of those of exemplary farmers in the Project Area resulted in a low-input model project which could easily be extended to other areas.

Progress of part of the Project was slightly delayed because of delays in the dispatch of experts and assignment of C/Ps, changes in the machinery and equipment to be provided and delay in the preparation of the pilot farm caused by bad weather. However, these events did not cause any major problems and these inputs contributed to the achievement of the Outputs.

(4) Impact

The Project had great impact.

[Achievement of the expected impact]

The Overall Goal was achieved thanks largely to the achievement of the Project Purpose. The skills of the technical staff of INDRHI, SEA and WUAs in water management, O&M and cultivation which were improved through the training conducted in the Project resulted in frequent technology transfer activities by the trainees to ordinary farmers and WUAs. The technology transfer realized by the implementation of the training as described in 3-1 above resulted in improvement in rice farming technologies at the level of farmers in the irrigated Project Area and improvement of the skills in water management and O&M of the WUAs which facilitated the smooth transfer of the irrigation facilities from INDRHI to the WUAs.

[Logicity of the causal relationship regarding the impact]

The causal relationship between the achievement of the Project Purpose and the achievement of the Overall Goal was strong. The technical staff of INDRHI, SEA and the WUAs who were trained and empowered through the training in the Project improved the quality and quantity of the training for farmers. The improved training realized improvement in the rice farming technologies of farmers in the irrigated Project Area and improvement of the technologies in O&M of the irrigation facilities of the WUAs.

[Extent of unexpected positive and negative impacts]

- Introduction of the improved technologies such as reduction in seeding rate and efficient fertilizer application resulted in an increase in the number of farmers who realized a reduction in production costs. Interviews with beneficiaries in the Pilot Zone revealed that the increase in income has contributed to improvement of living conditions including rebuilding of houses and purchase of motorcycles and clothes for family members.
- Introduction of an appropriate water management system by the Project resulted in efficient water management, stable water supply and guarantee of water rights. As a result, conflict over water rights

such as unequal distribution of agricultural water has almost completely been eliminated and collaborative activities among members of the WUAs have been facilitated.

- Since the completion of the Project, INDRHI has continuously received requests for training and workshops from WUAs throughout the country. Such requests are indicative of extension for further development of irrigated agriculture throughout the country.

(5) Sustainability

The sustainability of the Project is relatively high.

[Extent of sustainability]

INDRHI has continued to implement the follow-up project, the “Sustainable Development Plan,” described in 3-3, since the completion of the Project.

[Development of an environment guaranteeing sustainability (of organization)]

After the change of government in 2004, the new government allowed the active involvement of INDRHI and SEA in the Project, which led to the transfer of irrigation facilities to 31 out of 32 WUAs in the country. (The transfer to the last remaining small scale WUA in the mountainous area is under preparation.) Since the completion of the Project, SEA has engaged in strengthening the organization and functions of the WUAs by continued implementation of training under the “Sustainable Development Plan” which aims at improvement in O&M after the transfer.

[Development of an environment guaranteeing sustainability (of technologies)]

Some of the training lecturers who were trained in the Project have resigned. However, the technical basis for the training of lecturers and development of training curricula and materials has been established through the Project and INDRHI and SEA have continued to implement the training even after the completion of the Project. The training curricula and materials developed on the basis of the needs of the beneficiaries and the technologies acquired on the pilot farm have been updated successively to better reflect the reality in the field. The reputation of the training lecturers who have accumulated practical experience since the Project was implemented is so high that they continue receiving requests for training from WUAs nationwide.

[Development of an environment guaranteeing sustainability (of finance)]

Since the completion of the Project, INDRHI and SEA have set aside part of their budget to continue implementing the training project established in the Project in areas surrounding the Project Area under the “Sustainable Development Plan”, the follow-up project to this Project, and are engaged in extending the Project Outputs throughout the country.

4-2. Factors that have promoted the Project

(1) Impact

- The Project implementers (Japanese experts and C/P organizations such as INDRHI and SEA) and the beneficiaries (WUAs and farmers) held a number of consultation meetings on the development of training materials and curricula and the development and operation of the pilot farm. The constant close attention of the project implementers to the needs of the beneficiaries and the reality in the Project Area led to the creation of confidence between the project implementers and the beneficiaries. This confidence in turn led to the smooth technical transfer to ordinary farmers.
- The adoption of low-input farming in consideration of the expenses borne by contracted farmers on the pilot farm was effective in verifying and demonstrating technologies for extension appropriate to the reality in the field. As a result, facility development and farming activities modeled after the pilot farm were practiced in and outside the Project Area and such activities partially contributed to the extension of the Outputs of this Project.

(2) Sustainability

- Information gathering regarding not only Japanese rice farming and irrigation technologies, but also the advanced technologies of exemplary farmers and technologies appropriate for the Project Area and practical testing of the improved technologies on the pilot farm allowed the beneficiary farmers and terminal water managers to select the technologies which they would use by themselves. This experience in selecting technologies has led some of the technical staff trained in this Project to adopt appropriate new technologies of their choice even after the completion of the Project.
- Some of the former C/Ps trained in this Project have been hired as supervisors and technical staff by the WUAs. They are contributing to O&M of the recently transferred facilities by inexperienced WUAs.

(3) Others

- During the period from before implementation of this Project until the present time after completion of

the Project, various rice farming and irrigation projects have been implemented as yen-loan projects (construction of irrigation facilities) and with assistance from other donors such as Taiwan, South Korea and the Inter-American Development Bank (IDB). The implementation of these projects has provided opportunities for the Outputs of this Project to be utilized and, thus, contributed to extension of the Outputs throughout the country.

4-3. Factors that have inhibited the Project

(1) Impact

- The harvests of some of the beneficiary farmers decreased significantly in 2007 because of the natural disaster caused by abnormal rainfall.
- A steep rise in the price of gasoline increased the expenses for fuel and chemical fertilizer and, consequently, reduced profits.

(2) Sustainability

- The replacement/resignation of C/Ps during and after implementation of the Project was an inhibitory factor to the training of technical staff. At present, eight out of the 27 former C/Ps are involved in the “Sustainable Development Plan,” the follow-up project to this Project. This low personnel retention is a factor inhibiting the extension of the Project Outputs.
- Since the completion of the Project, the budget and human resources of INDRHI available for the “Sustainable Development Plan,” the follow-up project to this Project, have been reduced from what was originally planned and only limited cooperation has been provided by other relevant organizations. These are among the factors inhibiting the nationwide extension of the Project Outputs.

(3) Others

- A trend toward sale of farms and reduction in the number of farmers has been observed in the Project Area. Thus, some of the beneficiaries trained in this Project have disappeared.

4-4. Conclusions

The Project was implemented appropriately in accordance with the original plan. The follow-up project of INDRHI has taken up the Project Purpose and this has contributed to the achievement of the Overall Goal. Of the five evaluation criteria, in particular, high relevance and impact have been observed since the Final Evaluation.

4-5 Recommendations

- INDRHI, instead of focusing only on strengthening the WUAs in the Project Area, shall reinforce and continue implementing the follow-up project, the “Sustainable Development Plan,” which reflects the experience and lessons learned in the Project, as an effort to reinforce O&M of the irrigation facilities by the 32 WUAs in the country.
- Because of the limited human and financial resources available for nationwide extension of the irrigation technologies established in this Project, INDRHI shall cooperate with SEA and the WUAs in an endeavor to strengthen the extension system in irrigated agriculture.
- As the Outputs of this Project are being utilized in irrigation projects by other donors such as Taiwan and IDB, INDRHI and SEA shall provide technical cooperation to countries in Central and South America by dispatching their experts and trained technical staff.
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4-6. Lessons Learned

- Establishment of low-input agricultural technologies with reduced production costs, as well as adoption of the technologies used by exemplary local farmers and appropriate technologies, are effective in nationwide expansion of the technologies after the completion of a project.
- As was seen in the use of the irrigation technologies and training curricula established in the Project in rice farming and irrigated agriculture projects focusing on development of the irrigation infrastructure which are being implemented outside the Project Area, synergic effects can be expected from formulation of, or cooperation between, projects in which both introduction of technologies and training and infrastructure development are taken into consideration.