

# PHILIPPINES

## Ilocos Norte Irrigation Project (Stage I)

Report Date: July 1998

Field Survey: November 1997

### 1 Project Summary and JBIC's Cooperation

This project aims to improve agricultural productivity through the creation of an agricultural production base in the beneficiary area (Ilocos Norte State, Honga River Right Bank, 10,200 ha), involves the construction of irrigation facilities including diversion dams in 5 locations, irrigation canals, drainage canals and related roads.

The ODA loan for this project covered all foreign currency portion for the construction work of the above-mentioned irrigation facilities, procurement of materials and equipment, as well as consulting services.

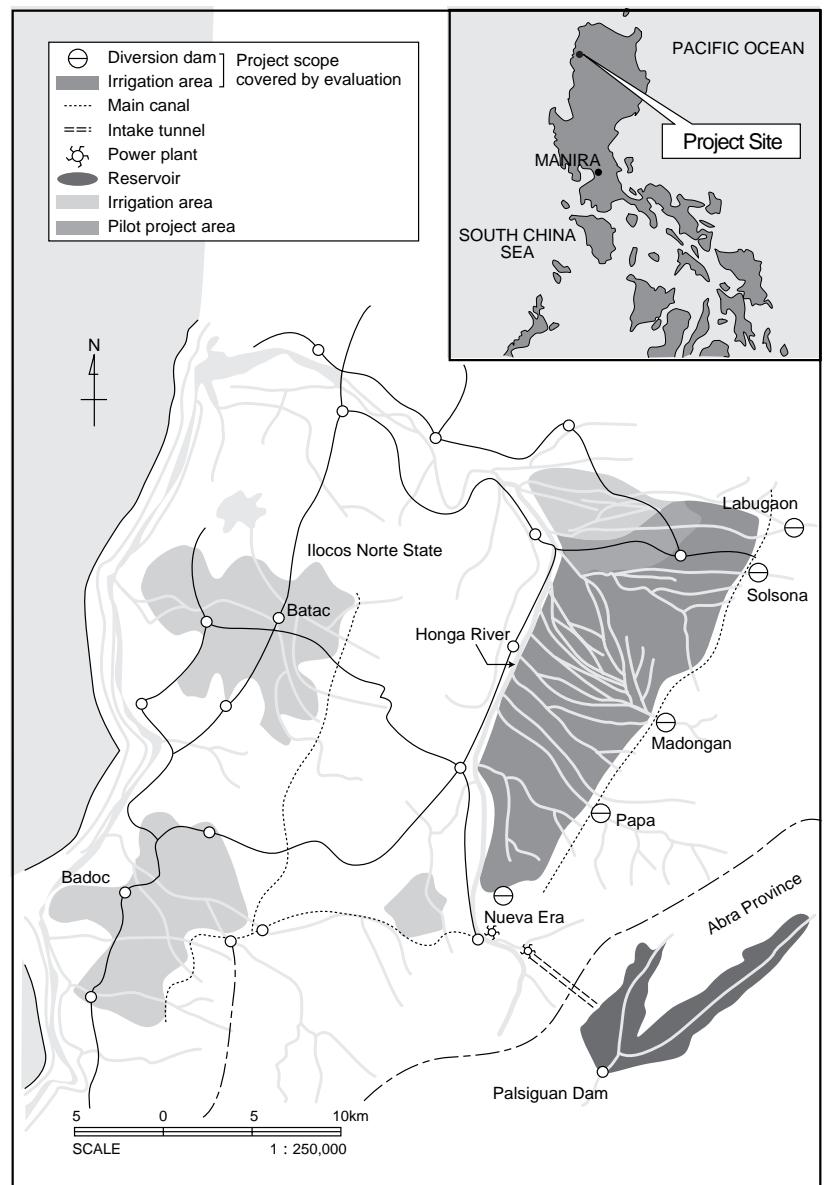
### 2 Evaluation Results

#### (1) Project Implementation

##### (i) Project Scope

The five diversion dams needed either to be reconstructed or repaired due to typhoon damage, but they were largely completed as initially planned, and thus there were no particular problems. For canals and on farm facilities, the needs of the traditional "Zanjas" (irrigation cooperatives) were taken into consideration, and designs were modified so as to allow maximum use of existing facilities. The fact that effective operation and management following completion was taken into consideration in this way is commended. During the project implementation, over a three-year period (from 1984, 1985, and 1986), the beneficiary area took the brunt of 5 typhoons of a magnitude that exceeded all predictions. In order to deal with the resulting damage, urgent disaster prevention work was undertaken utilizing ODA loan. This disaster prevention work aimed to repair and protect the project facilities, and is thus judged to have been indispensable for the project effect to come out.

##### (ii) Implementation Schedule



Borrower / Executing Agency	Government of Republic of the Philippines / National Irrigation Administration: NIA
Exchange of Notes / Loan Agreement	June 1981 / June 1981
Loan Amount / Loan Disbursed Amount	· 5,000 million / · 4,801 million
Loan Conditions	Interest: 3.0%, Repayment period: 30 years (10 years for grace period), General untied
Final Disbursement Date	December 1993

The project was completed in December 1995, or 116 months behind the original plan of April 1986. This delay is consisted of [1] delay on the original construction work, [2] additional of urgent disaster prevention work. There were three main reasons for the original construction delays: design changes for irrigation canals (switch from top-down method suggested by the NIA to bottom-up method to reflect the opinion of Zanjeras), typhoon damage, and insufficient funds. Neither of three factors could be predicted at the commencement of planning, so that the resulting construction delay is considered to have been unavoidable. Particularly, regarding design changes, their implementation contributed to the project yielding good results, so that they are considered to have been necessary. The urgent disaster prevention work, while not initially planned, was a countermeasure to deal with typhoon damages as a natural disaster, and considering the achievement of the aims of this project as well as the projects effects and impacts, and is thus seen as an indispensable measure. In response to the delay of the implementation schedule, JBIC did not only agree to extend the loan disbursement period twice (in 1987 and 1990), but also to accept partial changes in the loan disbursement procedure as a way to remedy the insufficiency of funds (insufficiency of advance funds).

(iii) Project Cost

The foreign currency portion of the project ended up amounting roughly to the sum that was originally planned. The local currency portion of the project ended up approximately twice the sum that was originally planned. Items for which there were significant changes in terms of foreign currency portion were civil works and the procurement of materials and equipment. Civil works experienced a cost overrun of approximately ¥870 million caused by the urgent disaster prevention work. Materials and equipment procurement costs went down from the originally estimated amount by approximately ¥639 million due to exchange rate fluctuations and the change in the form of the contract. The increase in local currency portion was due, among other things, to the implementation of civil works related to disaster prevention work, as well as a sudden jump in labor and other costs due to inflation.

Comparison of Original Plan and Actual				
(1) Project Scope	Plan		Actual	
1) Actual irrigation area	8,080ha		8,545ha	
2) Diversion dam	Height (m)	Length (m)	Height (m)	Length (m)
Labugaon	2.20	77.5	2.20	76.8
Solsona	2.00	70.0	2.00	70.0
Madongan	2.75	133.0	2.75	136.2
Papa	2.85	158.4	2.85	159.8
Nueva Era	2.15	145.0	2.15	148.1
3) Irrigation canal				
Main/Lateral	54km / 103km		59km / 126km	
4) Drainage canal				
Main/Lateral	55km / 78km		56km / 10km	
5) Service roads				
Main/Lateral	94km / 83km Total = 177km		Total = 163km	
6) On farm facilities				
Farm ditches / Farm drains	1,074km / 600km		949km / 600km	
7) Disaster prevention works (addition)				
Schedule I	Rehabilitation of the Solsona River		Same as planned	
Schedule II	Rehabilitation of the Madongan River		Same as planned	
Schedule III	Rehabilitation of the Papa River		Same as planned	
Schedule IV	Rehabilitation of diversion dams and roads		Same as planned	
Schedule V	Rehabilitation of Labugaon, Solsona canal		Cancelled	
Schedule VI	Rehabilitation of Madongan, Papa, Nueva Era canal		Same as planned	
<b>(2) Implementation Schedule</b>				
Start of construction ~Completion of construction	January 1983 ~ April 1986 [40 months]		September 1983 ~ December 1995 [148 months]	
<b>(3) Project Cost</b>				
1) Foreign currency portion	· 5,000 million		· 4,801 million	
2) Local currency portion	270.99 million peso		555.51 million peso	
3) Total	· 12,639 million		· 7,829 million	
Exchange Rate	1 peso · 28.19 (1980)		1 peso · 5.45 (average at the time of contract)	

## (2) Organization of the Executing Agency (implementation and operation/maintenance after completion)

### (i) Implementation Scheme

The fact that the NIA Project Office implemented the project while coordinating with farmers (Zanjeras) is commendable. However, the fact that the NIA required long period on procedures for the implementation of urgent disaster prevention work indicates that there is room for improvement. Consulting services were provided by the same Japanese firm throughout from the F/S stage of JICA. Therefore, this consulting firm had a thorough knowledge of the project and its performance has been evaluated as being extremely satisfactory in reports from NIA. Actually, this firm has demonstrated a flexible response to situations, for example losing no time in surveying typhoon damage, and it is considered to have paid every effort in solving problems. The Contractors were a Japanese company and a Philippine company. The Japanese company completed its share largely as planned even while running into typhoon damage. The Philippine company, while showing room for improvement with regard to the materials and equipment management methods, had no major problems in its overall performance.

### (ii) Operations and Maintenance

Following the completion of this project, the NIA's supervision was transferred from the Construction Management Department (CMD), which was in charge of the implementation of construction to the System Management Department (SMD) since January 1996. Maintenance work is being performed mainly by NIA's Ilocos Norte Irrigation Office in cooperation with irrigation cooperatives. Irrigation cooperatives are utilizing the function of Zanjeras, a form of cooperative that has existed for a long time before the project. And water charges are collected by the NIA through these irrigation cooperatives. In this way, this project is commended for its use of the system for operation and maintenance of traditional irrigation cooperatives to perform adequate maintenance.

### (iii) Project Effects and Impacts

The rice crop yield in the project area, which prior to the project implementation was 1.7 tons/ha during the rainy season and 1.3 tons/ha during the dry season, rose to 4.0 tons/ha during the rainy season, and 3.4 tons/ha during the dry season following the project completion (1996). The annual production of rice, which prior to the project implementation was 24,907 tons during the rainy season and 3,719 tons during the dry season, rose to 41,106 tons during the rainy season and 9,319 tons during the dry season following the project completion (1996). Average farming income rose from 8,075 pesos in 1982, immediately after the commencement of the project, to 66,381 pesos in following completion of the project in 1996 (nominal base), or an increase of approximately 800% (CPI rose approximately 500%).

This project was unusual for its time in that it reflected the needs and opinions of the farmers who were the beneficiaries, and it was an early example of successful participatory development. Now that the project has been completed, Zanjeras is active as an irrigation cooperative and its strong organizational ability contributes to the realization of the project's effects.

Changes in the Yield per Hectare										(ton/ha)
FY	Planned crop yield		Actual							
	Rice		Rice		Maize	Tobacco	Melon	Mango	Onion	Raw cotton
	Rainy season	Dry season	Rainy season	Dry season						
At the time of appraisal			1.7	1.3	—	—	—	—	—	—
1985	2.66	—	—	—	—	—	—	—	—	—
1986	2.91	2.69	*2.51	*2.22	*1.87	*1.18	—	—	—	*0.76
1987	2.92	2.75	—	—	—	—	—	—	—	—
1988	3.30	3.27	—	—	—	—	—	—	—	—
1989	3.60	3.76	—	—	—	—	—	—	—	—
1990	3.79	4.10	2.77	1.89	2.60	1.45	—	—	—	0.75
1991	3.84	4.20	2.69	2.54	2.30	1.82	4.63	—	—	0.85
1992	—	—	2.95	2.29	2.45	2.01	4.72	0.35	—	1.06
1993	—	—	2.96	2.36	3.40	1.63	4.62	0.39	3.72	—
1994	—	—	3.07	2.83	3.64	2.25	3.35	0.47	3.65	—
1995	—	—	3.68	2.96	3.56	2.64	5.08	0.68	2.06	—
1996	—	—	4.03	3.40	3.73	2.85	5.20	0.65	—	—

(Note) \*: Average value between 1983 and 1986.

(Source) NIA materials

### **3 Lessons Learned**

- (1) In order to attain effectiveness and sustainability in irrigation projects, the participation of farmers should be sought from the initial planning stage, and sufficient understanding of irrigation/drainage canal routes and operation methods must be promoted.**

This project incorporated the needs of the farmers' cooperative (Zanjas), as the beneficiary, from the design stage. As a result, the farmers participate enthusiastically in the maintenance work for the project since its completion. Their work is done properly and contributes to the realization of project effects. Thus if irrigation projects are to be effective and sustainable, the beneficiary farmers should be asked to participate from the planning stage, and they should be encouraged to fully understand the water distribution routes and the operation methods for irrigation systems.

(Note: JBIC encourages executing agencies to seek the participation of beneficiaries as necessary in projects in irrigation and other sectors).

- (2) It is possible to efficiently complement the results of irrigation projects by training farmers.**

The introduction of cash crops in the area targeted by this project has raised the farmers' income per unit land area. This is the product of suitable crop planning and farmers' training that was based on the crop plans. Appropriate training for the farmers has made it possible to increase the impact of the project.

(Note: JBIC has resolved to incorporate this kind of training within the scope of future irrigation projects).