

## 付 属 資 料

資料1 技術協力要請書

資料2 第1次長期調査ミニッツ

資料3 第2次長期調査ミニッツ

資料4 討議議事録 (R/D) 及び暫定実施計画 (T S I)

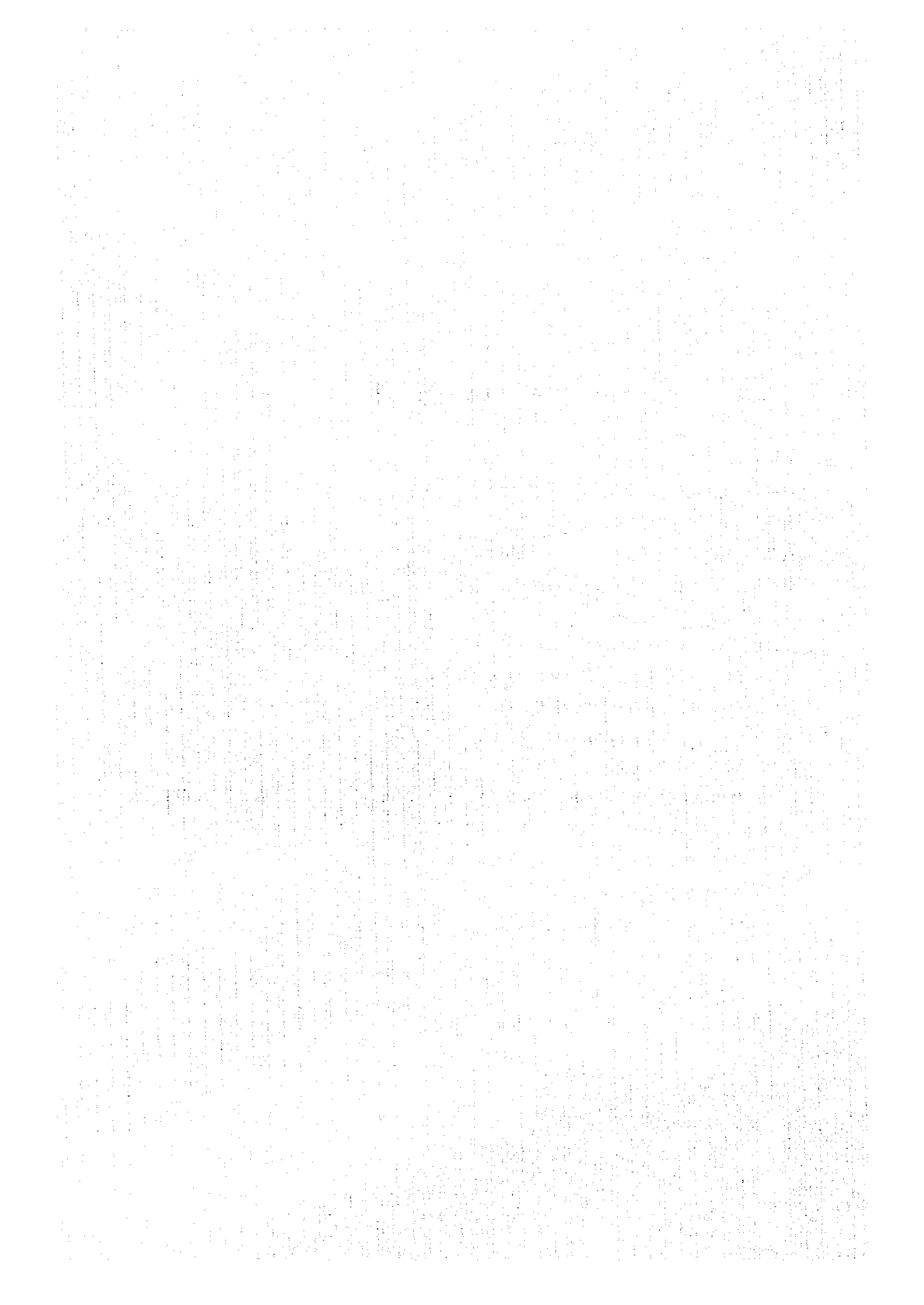
資料5 第1次長期調査主要協議経緯要旨

資料6 ボホール州農業関連資料

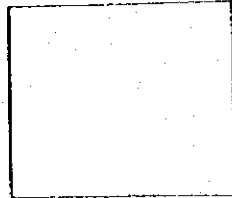
- (1) ボホール州の町村別農業情報
- (2) ボホール州の町村別稲作付面積と生産農家数
- (3) 「穀物生産強化計画」州別目標面積

資料7 ボホール灌漑計画関連資料

- (1) ボホール灌漑計画概要図 (第2期)
- (2) IRRIGATION DEVELOPMENT STATUS AND PROGRAM AS OF DECEMBER, 1995
- (3) ボホール灌漑計画全体用水系統図
- (4) 水利組合 (I A) の機能
- (5) カバヤス・ダムの嵩上げ計画



資料1 技術協力要請書

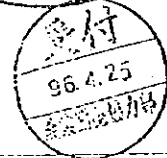
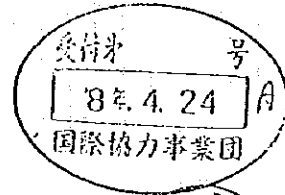


703

第 0349 号  
平成 年 月 日  
平成 8 年 4 月 22 日

外務大臣 殿

在フィリピン  
松田大使

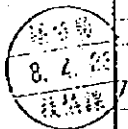


件名 プロジェクト方式技術協力（比：ポホール農業振興センター（フェーズ2）、正式要請書の送付）

引用公・電信 日付・番号	往電第147号	主管課（文書記号） 経協技
-----------------	---------	------------------

比外務省より本件正式要請書が接したところ、別添にて送付申し上げる。

(了)



本信送付先：  
本信写送付先：  
省内写配布希望先：

付添添付   
付属空便 (行)   
付属空便 (DP)

GA-12-1

在外公館

(昭和63・四・12改)

No. 960934

The Department of Foreign Affairs presents its compliments to the Embassy of Japan and has the honor to endorse the Project entitled "Integrated Agricultural Promotions - Model for lowland in Central Visayas" (Bohol Agricultural Promotion Center- (BAPC) Phase II) of the Department of Agriculture under the Japanese Government (GOJ) Project-Type technical Cooperation Program (PTTCP) for FY 1996.

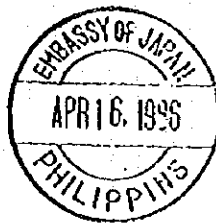
The project aims to conduct baseline studies to ensure the technical suitability of production technologies applicable for irrigation systems at the newly installed Capayas Irrigation Project and Bohol Irrigation project, to conduct researches on technology adaptation and to improve and intensify technology transfer for extension workers and farmers beneficiaries of the irrigation system.

The Department would appreciate being informed of the Japanese Government's decision on this request.

The Department of Foreign Affairs avails itself of this opportunity to renew to the Embassy of Japan the assurances of its highest consideration.

Enclosures: as stated

Pasay City, 01 April 1996



A handwritten signature or set of initials, possibly "B", written in dark ink to the right of the stamp.



AD 1222 2/2

REPUBLIC OF THE PHILIPPINES  
**NATIONAL ECONOMIC AND DEVELOPMENT AUTHORITY**  
NEDA sa Pasig, Amber Avenue, Pasig City

Cable Address: NEDAPHIL  
P.O. Box 419, Greenhills  
Tel. 631-0945 to 64

FEB 27 1986

HONORABLE DOMINGO L. SIAZON, JR.  
Secretary  
Department of Foreign Affairs  
2330 Roxas Boulevard, Pasay City

Attention: Office of Asia and Pacific Affairs

Dear Secretary Siazon:

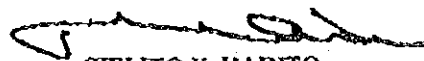
This is to forward for onward transmittal to the Japanese Government (GOJ) the project entitled "Integrated Agricultural Promotions - Model for Lowland Irrigation in Central Visayas" (Bohol Agricultural Promotion Center - (BAPC) Phase II) submitted by the Department of Agriculture for funding under the Japanese Government (GOJ) Project-Type Technical Cooperation Program (PTTCP) for FY 1986. The project document has been sent in advance to the Japanese Embassy.

The project aims to (i) conduct baseline studies to ensure the technical suitability of production technologies applicable for irrigation systems at the newly-installed Capayas Irrigation Project and Bohol Irrigation Project supported by the GOJ; (ii) conduct researches on technology adaptation and verification of rice-based cropping systems with emphasis on farm machinery (pre-production, production and post harvest) and water management technology; (iii) validate integrated farming technologies for vegetables and upland crops cultivation to irrigated ecosystem; and (iv) to improve and intensify technology transfer for extension workers and farmer beneficiaries of the irrigation systems to increase farm production and income.

We believe that the implementation of the BAPC Project Phase II is a timely support for Bohol Province which is seen to assume a key role in ensuring food security in the region. Moreover, the BAPC has proven effective and efficient in providing services to all its clients and hence, strongly justifies the need to upgrade its facility and equipment as well as expand its functions to more relevant concerns in the agriculture sector.

Thank you and warm regards.

Very truly yours,

  
CIRLITO F. HABITO  
Secretary of Socio-Economic Planning  
and NEDA Director-General

cc: Secretary Salvador Escudero III, DA  
Resident Representative Akihiko Hashimoto JICA  
Ms. Zoraida M. Villegas, Chief, Project Packaging Group, DA  
Mr. Ricardo D. Oblora, Manager, DA-APC



*Tulong-tulong  
sa Pag-unlad*



Republic of the Philippines  
**DEPARTMENT OF AGRICULTURE**  
 Office of the Secretary  
 Elliptical Road, Diliman, Quezon City

24 January 1996

Hon. Ciriaco F. Habito  
 Secretary for Socio-Economic  
 Planning and Director General  
 National Economic and  
 Development Authority  
 Amber Avenue  
 Pasig City

AV 1093 7/21

Adm. E. MEDA  
 Jan. 26, 1996  
 Mr. Ciriaco F. Habito  
 National Economic and Development Authority

Dear Secretary Habito:

Very recently, we have just received the JICA After Care Mission for the Bohol Agricultural Promotions Center and discussed the scope of the After Care Program for the Center, which is for implementation this year.

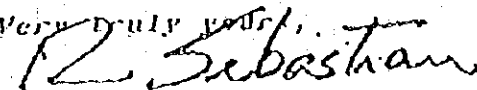
After lengthy discussions with the Mission, we feel that the activities under the After Care Program are limited and those will not be able to provide sufficient support to enable us achieve the objective of maximizing the utilization of the Copayás Irrigation System where APC will be providing technology support for the extension workers and farmers in the area.

The Copayás Irrigation System is a JICA grant aid project designed to serve some 750 hectares for rice production. The Bohol APC project will be pilot tested in this area and the results will be replicated to the areas in another irrigation systems which is the Bohol Irrigation Project Phase 1, under OECF.

In this connection, may we request that the After Care Program assistance be upgraded instead to a Project Type Technical Cooperation for us to be able to attain our objective for the area.

We look forward to your favorable evaluation and subsequent endorsement, at the earliest possible time, of the attached project to the Embassy of Japan.

Thank you and warm regards.

Very truly yours,  
  
 ROBERTO S. SEBASTIAN

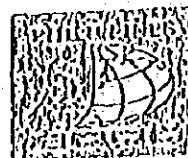
Secretary

att: as stated

ZVV/COA  
 crop51.ta.bapc/1/16/96



United Agra  
 HALIGI NG  
 PILIPINAS 2000



Attachment 2  
MINUTES OF UNDERSTANDING ON  
JAPANESE TECHNICAL COOPERATION  
FOR THE DEVELOPMENT OF  
BOHOL AGRICULTURAL PROMOTION CENTER  
IN THE REPUBLIC OF THE PHILIPPINES

PROPOSAL

for a

Project-type Technical Cooperation

on

BOHOL AGRICULTURAL PROMOTION CENTER PROJECT II

Submitted to the

GOVERNMENT OF JAPAN

through the

NATIONAL ECONOMIC AND DEVELOPMENT AUTHORITY

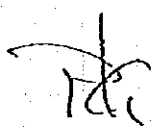
and the

DEPARTMENT OF FOREIGN AFFAIRS  
Government of the Philippines

Proponent

BOHOL AGRICULTURAL PROMOTION CENTER  
Department of Agriculture

18 January 1996



I. Title of the Project

**BOHOL AGRICULTURAL PROMOTION CENTER PROJECT II**

II. Implementing Organization

1. Name of the Implementing Organization

Bohol Agricultural Promotion Center

2. Project site

Capayas Irrigation Project, Ubay, Bohol, Philippines

3. Related Government Department

Department of Agriculture

4. Outline of the Implementing Organization

Bohol APC is a special project and a research outreach station for lowland irrigated development zone of region 7, mandated to develop and disseminate suitable technology for Boholano farmers and Central Visayas leading to increased agricultural production and farm family income.

5. Outline of Activities

Bohol APC operated in an integrated research, extension, and training and information functions. It is concentrating on the crops sector specifically rice, vegetables and upland rice.

6. Annual Budget

Bohol APC activities had been sustained since its turn-over last crop year 1990. Its annual budget was sourced out from the Department of Agriculture local fund as special project. Reflected on the table from 1992-1996.

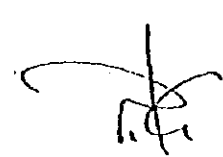
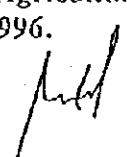




Table I. BAPC Budget, 1992 - 1996 (in thousand pesos)

PARTICULAR	1992	1993	1994	1995	1996
Personal Services (PS)	2,400	2,076	2,076	2,755	2,076
Maintenance Operating & Other Expenses (MOOE)	3,557	5,856	5,651	6,018	6,319
Capital Outlay		1,000			
T O T A L	5,957	8,932	7,727	8,773	8,395

### III. Project Proposal

#### 1. RATIONALE

The food situation in the country has been highlighted with the rice crisis it experienced in the third quarter of 1995. Now more than ever, food security has become a significant issue that need to be addressed at all levels of governance.

Rice continues to be the most important agricultural commodity in the country being the major staple food of more than 80% of the population.

However, the country's rice production has fallen short of its consumption requirements by an annual average of about 150,000MT over the past 15 years. The country has continuously resorted to rice importation to meet such need.

There are a number of factors that led to this current state in rice production and among others, these are i) reduction in rice hectarage, ii) low yields, iii) low labor productivity, iv) high cost of inputs, v) inadequate production and post production infrastructure support systems as well as access to credit.

*Handwritten signature*

*Handwritten signature*

In the Asian region, the occurrence of droughts, flooding and typhoons have resulted in a substantial reduction of global rice stocks. Such a situation has likewise triggered increases in global prices which consequently led to a scramble for limited export availabilities from Thailand, Vietnam and the United States

This condition is perceived to prevail in the future. Hence, the Philippines has to take a closer look at its food production capability in order to address the need to ensure self-sufficiency in rice and white corn for human consumption.

The Medium Term Agricultural Development Plan pursued by the Department of Agriculture focuses on the Key Production Area approach. It identifies and focuses government support on areas where agro-climatic features and market conditions are favorable for producing, processing and marketing specific products. It also addresses the need to ensure the efficient use of scarce resources and help obtain for farmers and fisherfolks the best returns on their investments.

In the light of the paramount concern for food security, the Department of Agriculture has stepped up its efforts in sustaining the MTADP, specifically the Grains Production Enhancement Program for rice self-sufficiency. The GPEP focus in providing production inputs i.e., seeds and fertilizers, irrigation, farm to market roads, post-harvest facilities, technology transfer, market information and credit support in Key Grains Areas has been given due emphasis.

## 2. CURRENT SITUATION

To support the national call for self-sufficiency, the regional and provincial level has similarly focused its thrust towards the provision of support services in the agriculture sector and enhancing extension services.

In the Central Visayas region, the only province identified as a key grains area is Bohol hectares until 1998. It also has been identified as a key commercial crops area for upland crops and vegetables particularly for tibi kinampay (yam), cassava, peanut, tomato and cabbage.

Of the total agricultural land area of 323,160 in Bohol, 83,540 hectares are currently devoted to rice production while the rest are for other crops. Of this, 17,090 hectares are irrigated while 66,750 has. are rainfed. As a KGA for the region, 13,000 hectares more of irrigable areas are targeted until 1998.

The province's palay production has steadily increased from 123,408 in 1993 to 148,012 in 1995. With this, Bohol has reached a self-sufficiency level of 67.58% in palay production compared to 36.72% of Region VII in 1995. (In the last quarter of 1995, Bohol was able to generate a surplus of 5,336.67MT).

It should be noted that the Bohol's palay production has been achieved with only a few of its farmers utilizing farm machineries.

These farm and post harvest machineries are limited to hand tractors, threshers, blowers and the like.

The dryers in the area are likewise limited to solar drying using the road and other multi-purpose drying pavements. Too, the milling facility are with the private millers and only a handful of farmer-cooperatives/associations have their own milling facility.

On the other hand, Bohol's crop production in upland crops and vegetables indicates that the province is a potential food basket for the region.


In the Department's pursuit of implementing the MTADP, the DA-Regional Field Unit VII tasked the Bohol-Agricultural Promotions Center, which is also a Research Outreach Station (ROS) for lowland irrigated developmental zone, to be the frontline unit for the GPEP (rice and corn) and KCCDP (yam, tomato, cabbage, cassava and peanut) implementation in the region. Specifically, the APC has been tasked with:

- the production of registered seeds
- implementation of post-harvest component as well as irrigation component
- conduct of techno-demo and,
- training and technology transfer

For the past 11 years and in view of the Technical Cooperation with Japan during the same period, the Bohol APC has been able to develop suitable crop technologies and innovative approaches in technology transfer which are being sustained up to the present. Such was achieved as the Center activities revolved around an integrated research, extension and training system creating solutions to immediate constraints of agricultural development in the province. It is for the same reason too that the APC was institutionalized under the Department of Agriculture with the rationalization of research stations in 1991.

As a Center, Bohol APC has likewise been able to operate efficiently under the devolved set-up. Bohol LGUs look upon the APC as an institution where adaptive/verified technology is available to enhance their extension service in the agriculture sector. It also has been tapped by the LGUs in the provision of guidance and advise on their technical problems/needs in agriculture. With this, the APC has established a strong linkage with the local government units.

With the completion of two irrigation systems in the province, the Center/ROS' role in adaptive research and technology transfer cannot be overemphasized. These new irrigation systems under NIA -Capayas Irrigation Project (CIP) and the Bohol Irrigation Project Stage I (BIIP) will irrigate some 5,280 hectares of potential irrigable areas and will benefit more than 2,000 farm families.



The Capayas Irrigation Project was designed to service 750 hectares. However, the service rate of the system is currently at 400 hectares only owing to the current level of efficient water management on-farm.

Hence, the technology that goes with the irrigation projects at the moment needs to be verified at the farmer's level to determine its suitability, efficiency and effectiveness in the area. Much has to be done in terms of field trials before these technologies are packaged for general adaptation.

While NIA will be able to supply the water element through irrigation for agricultural productivity, the production to marketing technology package/s that will likewise support and enhance agricultural productivity as well as the psycho-social development that will help motivate the farmers to fully adapt technology transfers need to be provided by the APC.

In effect, this new situation will deepen the APC experience in linking development efforts among agencies of the national government and the local government units in collaboration with the farmers and other non-government organizations. This will likewise provide the Department with meaningful linking and collaborating experiences that can be used as a model that can be replicated in the region and nationwide as well.

### 3. DEVELOPMENT CONSTRAINTS

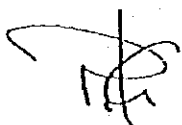
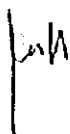
As earlier mentioned, the new irrigation projects under NIA has opened up new areas for rice production as well as improving existing rice production areas that will be covered by the irrigation services.

While there are available technologies in the Department, these need to be verified vis-a-vis the location-specific requirements in production, post-production up to marketing, inherent cultural practices/values.

With regard to the existing equipment and facility of the Center, there is a need to upgrade these to be more relevant for technology transfer.

The technical and institutional capability of the APC as a Center and ROS needs to be enhanced. The Phase I of the Technical Cooperation has honed the Center's physical and technical capability in research, training and extension in the areas of crops.

However, the new situation will demand an intensive and accelerated physical and technical build-up in the field of water management, farm mechanization, social technology and technology transfer.



The Center's institutional capability in terms of linkaging and collaborative efforts with the local government units, other attached agencies within the Department, farmer-partners in development and other non-government organizations will likewise have to be strengthened.

The Japan experience in implementing government programs hand in hand with the local government units can provide insights for the Center in developing strategies and approaches in implementing development efforts in the area.

These can be achieved optimally with a technical assistance in terms of technology transfer, dispatch of experts and training of staff locally and internationally.

#### 4. DEVELOPMENT OBJECTIVES

With the project, the Bohol-APC aims at:

##### A. Long Term

- 1) Ensuring the adaptation of technology packages that will sustain food self sufficiency in the region and the country as well.
- 2) Replicating the APC linkage and collaborative experiences with other DA attached agencies, other National Government agencies in the region, local government units and the private sector as well, in other Regional Field Units of the Department on a nationwide level.

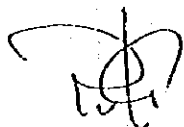
##### B. Medium Term

- 1) Developing and promoting viable models for the integration of production, post production technology, infrastructure as well as marketing support to strengthen the capacity of irrigation systems as potent vehicles for stabilizing food self sufficiency in the region.
- 2) Duplicating the APC linkage and collaborative experience with other DA attached agencies, other national government agencies, local government units and the private sector as well in Region VII.

##### C. Short Term

1. Conducting baseline studies to ensure the technical suitability of production technologies applicable for irrigation systems at CIP and BHIP.

fnh



2. Conducting researches on technology adaptation and verification of rice-based cropping systems with emphasis on farm machinery (pre-production - production and post harvest) and water management technology.
3. Validating integrated farming technologies that include vegetables and upland crops cultivation to irrigated ecosystems.
4. Improving and intensifying technology transfer activities for extension workers and farmer beneficiaries of the irrigation systems to increase farm production and income.
5. Documenting the APC linkaging and collaborative experience with other DA agencies, LGUs and non-government organizations such as the farmer's cooperative, irrigators' associations etc.

## 5. PROJECT DESCRIPTION

With the above objectives, the project will be established in the irrigable areas being serviced by the Capayas Irrigation Project. The site has a total irrigable area of 750 hectares dedicated mostly to rice cultivation and situated in five (5) barangays with four (4) existing Irrigators' Association.

In order to establish appropriate model for rice-based integrated farming system, intensive effort of APC will be thrown into the project giving due consideration and stress on the socio-economic aspect, community development, farmer's organization and cooperatives.

### A. Project Components

The following project components have been identified with the end in view of sustainable agricultural resources management and development for the area:

#### 1. Improvement of Rice-Based Farming System Location-Specific Requirements

This will focus on the improvement of available technologies for rice-based farming system for location specific requirements. Researches on varietal screening and adaptability, cultural management, post production and cropping systems on rice, upland crops and vegetables will be conducted.

*Handwritten signature*

*Handwritten signature*

2. **Strengthening Technology Transfer**

Enhancement of massive education and information services to LGU technical personnel and Irrigators' Association. Economical and productive farming options, and improved technology diffusion will be the emphasis on technology transfer programs.

3. **On-Farm Water Management for Irrigation System**

This will delve on the generation and development of integrated irrigation water management for Bohol Irrigation Systems so as to maximize the utilization and efficiency of water resources. Integrated studies on water management will be piloted at the Capayas Irrigation System in Ubay.

4. **Farm Machinery Mechanization**

The proposed farm mechanization program will focus on mechanizing the major farm operations like land preparation, weeding, harvesting and post harvest.

A mechanized model farm at the Capayas Irrigation Project will be established.

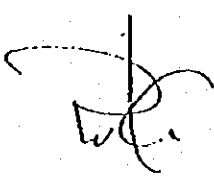
B. **Implementation Strategy**

The project will be within the service area of the Capayas Irrigation Project (CIP).

The CIP has four Irrigators' Association (IA). The project will initially pilot with two or three farmer cooperators using 5-10 contiguous hectares in one of the four IA as development partner for the first two years.

On the third to the fifth year, the results of the first two years will be replicated to the three remaining IAs. Also during the same period, the APC together with the LGU staff will monitor the replication of the results to the other members of the first IA. The replication of the other three IAs to the rest of their members will be done by the LGU as this will be outside of the project duration.

The project results will be adapted for the bigger irrigation project in the province. This will ensure the development of Bohol as the rice granary of the region.



The selection criteria for the Irrigators' Association are:

1. The IA has a counterpart for land consolidation.
2. The IA is fully institutionalized, inclusive of capability for self-reliance.
3. 80% of its members have been APC trained.

The selection criteria for farmer-partner are:

1. The farmer is APC trained with a track of capability for self-reliance.
2. The farmer manifests entrepreneurial abilities.

C. Implementation Schedule/Work Program

Please refer to Annex I

D. Expected Project Benefits

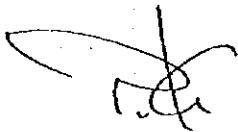
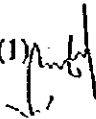
1. Increase crop production and farm income
2. Viable and sustainable Irrigators' Association
3. Enhancement of technical capabilities on the part of extension workers and farmers as well
4. Improvement and extension of mechanized technology to farmers
5. Increase in labor-cost productivity
6. Development and extension of integrated water management technology
7. Maximize irrigation water utilization

E. JICA Expert Requirement

The project will require the dispatch of experts in the following fields:

1. Long Term

Team Leader (1)





- Project Coordinator (1)
- Agronomy (1)
- Extension and Training (1)
- Water Management (1)
- Farm Machinery (1)

2. Short Term

- Cropping System
- Weed Science
- Plant Pathology
- Entomology
- Farm Management
- Agricultural Economics
- Cooperative
- Community Development
- Social Technology

F. Required Equipment

The project will require provision of equipment for the following areas:

- Farm Machinery and Equipment
- Laboratory and Experiment Equipment
- Audio-Visual Equipment
- Water Management and Meteorological Equipment
- Office Equipment and Supply
- Vehicles

G. Counterpart Training in Japan

On an average of four trainees per year, Bohol-APC counterparts shall attend individual training courses or group courses to Japan to enhance their technical capability in the field of:

- Rice Production / Cultivation
- Extension and Training Methods
- Water Management
- Farm Mechanization
- Upland Crops Cultivation
- Vegetable Crops Cultivation
- Post Harvest
- Cooperative Development




Two observation tours per year shall be scheduled for the committee members to provide them insights and consequently broaden/deepen their appreciation for the technologies and approaches the APC is improving.

H. Financial Support to Training Program

The training courses for the project will need financial support in view of unprogrammed courses that may arise within the project duration and designed by Project Management Committee in collaboration with the JICA experts.

I. Financial Support to Facility Development

The financial support to facility development is necessary in view of the facility requirement for post-harvest equipment.

J. Philippine Counterpart for the Cooperation Project

1. Budget

The Department of Agriculture will provide the Center

with the necessary budgetary appropriations for the operations of the project.

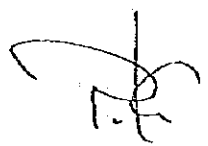
2. Personnel

The Department of Agriculture will provide the Center with the number of qualified permanent staff as necessary, to serve as counterpart personnel for the long term and the short term experts the project will require specially for the new fields of expertise.

6. ORGANIZATION AND MANAGEMENT

A. Committees

The project will have three committees namely, the Advisory Committee, Joint Committee and the Project Management Committee.



An Advisory Committee will be established for the Project. This committee will provide policy directions and guidance for the project. The Committee shall be composed of:

Chairperson - DA Undersecretary for Regional Operations, Research and Training

Members:

Director, DA-Regional Field Unit VII  
JICA-Phil. Office Resident Representative

Representative from DA-PMS Project Packaging Group  
NEDA Central Office Project Management Staff  
Governor, Bohol Province

The Joint Committee will be established to set the policy guidelines for the project. The committee will be composed of:

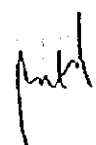
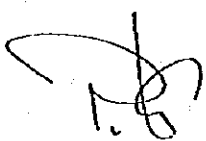
Chairperson : Director, DA Regional Field Unit  
Co-Chairperson: JICA Team Leader

Members:

Provincial Agricultural Officer  
Provincial Planning Development Officer  
Superintendent, CENVIARC  
APC Project Manager/Superintendent  
Project Irrigation Officer  
NFA Provincial Manager  
ATI Superintendent  
Sangguniang Paulalawigan for Agriculture  
Mayor, Municipality of Ubay  
NEDA Regional Office Representative  
Coordinator of JICA Team in Bohol and nominated expert by JICA Team Leader

A Project Management Committee (PMC) will be established for purposes of an efficient management of day to day operations. The Committee will ensure the full implementation of the activities of the project as well as prepare the work and financial plan of the project on an annual basis. The PMC will be composed of:

Chairperson : APC Project Manager  
Co-Chairperson : JICA Team Leader



Members : Municipal Agriculturist  
Project Irrigation Officer  
APC Division Chiefs (Research, Extension,

Training)

B. Roles and Relationships for Project Management Operations

1. Bohol APC

1.1. Provide the technology package for CIP by conducting on farm researches.

1.2. Develop technical capabilities of LGU & farmer leaders

1.3. Disseminate and monitor technology adaptation at the farm level.

2. NIA

2.1. Ensure the efficient operation of the CIP

2.2. Ensure the availability of water for the laterals.

3. Local Government Unit

3.1. Provide extension service to the farmers at the project site.

3.2. Provide the training coordination for the project.

3.3. Monitor and evaluate the adaptation of introduced technologies.

4. Irrigators' Association President

4.1. Scheduling of water distribution

4.2. Collection of irrigation fees

4.3. Maintenance of irrigation turnouts, canals and ditches

4.4. Monitor water distribution

The schematic diagram for the project operations is as attached.

7. PROJECT COST

The total project cost is US\$ 5M. Of this, the foreign counterpart is approximately US\$ 3.5 and the GOP Counterpart is US\$ 1.5.

*Full*

*[Handwritten signature]*

10. Work Program

FIELD / ACTIVITY	Y E A R					REMARKS
	1	2	3	4	5	
<p>1. Research and Technology Transfer Program</p> <p>1.1 Evaluation of present research &amp; technology transfer programs</p> <p>1.2 Research prioritization</p>						Assessment of the status of crop technologies, & technology transfer approaches. Prioritization of research areas to complement the improvement of location specific technologies for rice-based farming system.
<p>2. Improvement of Location Specific Technologies for Rice-Based Farming System</p> <p>2.1 Varietal screening &amp; adaptability</p> <p>2.2 Cultural management studies</p> <p>2.3 Studies on post harvest handling</p> <p>2.4 Epidemiology studies</p> <p>2.5 Studies on cropping system</p> <p>2.6 Studies on the utilization of fibrous crop residues and supplemental feeding of UMFB in village-based livestock production</p> <p>2.7 Studies on soil-related physiological problem</p>						Identification of cultivars on rice, upland crops and vegetables, development of appropriate cultural mgmt. practices / cultivation techniques such as seed and seedbed preparation, planting distance, direct seeding & pre-germination, fertilizer management, weed management, crop-water responses and post harvest handling. Development of strategies for forecasting insect pest population trends through IPM in order to avoid insect-seed borne diseases.
<p>3. Water Management for Irrigation System</p> <p>3.1 Evaluation of on-farm water mgmt. and farmers' needs</p> <p>3.2 Conduct of researches on water management</p>						Development of an integrated irrigation water management for maximum utilization and better use for Bohol Irrigation Systems.

FIELD / ACTIVITY	Y E A R					REMARKS
	1	2	3	4	5	
3.3 Establishment of on-farm operation and maintenance system of irrigation facilities						Evaluation & development of mechanized farm operations like land preparation, planting, weeding, harvesting and post harvest
3.4 Development of appropriate water management technology package						
4. Farm Machinery						
4.1 Assessment of farm mechanization status						
4.2 Testing, evaluation and improvement of existing farm machineries						
4.3 Identification and introduction of farm machineries / equipment suited for Bohol farming condition						
4.4 Establishment of a mechanized model farm						
4.5 Conduct of training and demonstration on the operation & maintenance of agricultural machineries and post harvest facilities						
4.6 Management and maintenance of agricultural machineries						
4.7 Conduct of economic study and technology verification on mechanized rice-based farming system						
5. Strengthening Technology Transfer						Enhancement and improvement of technology transfer through trainings on multi-commodity, social technology, post production technology, operation & maintenance
5.1 Conduct of trainings to organized farmers and rural youth						

PHASE2WPXLS

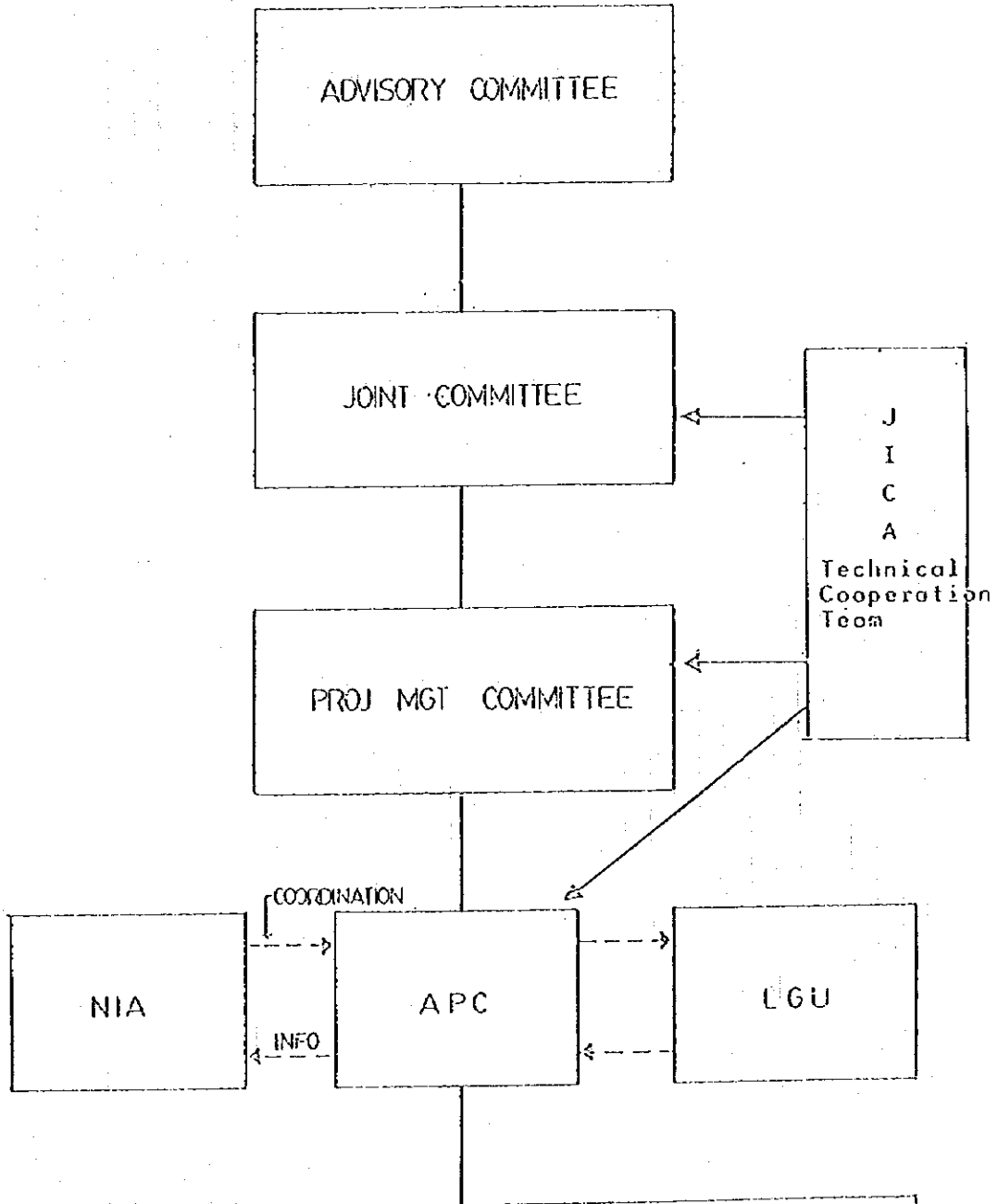
FIELD / ACTIVITY	Y E A R					REMARKS
	1	2	3	4	5	
5.2 Staff development / collaborative trainings for LGUs & DA-7 technical personnel						nance of agricultural machineries and post harvest facilities, appropriate water management technology, & technical staff development, farmers fora, area and spot demonstration farms, seed production and distribution, print and video productions, publications & distribution of information and teaching materials. Strengthening of Irrigators' Associations by facilitating consultative meetings and cooperative formation, planning / consultative workshops, and technical assistance & supervision of seed growers:
5.3 Establishment of technology demonstration farms						
5.4 Technology Information Campaign						
5.5 Seed Production and Distribution						
5.6 Institutional development for organized farmers						
5.7 Production and distribution of information and teaching materials						
5.8 Conduct of planning / consultative workshops						
5.9 Economic and baseline surveys						
5.10 Training impact evaluation						

*Handwritten signature*

*Handwritten signature*

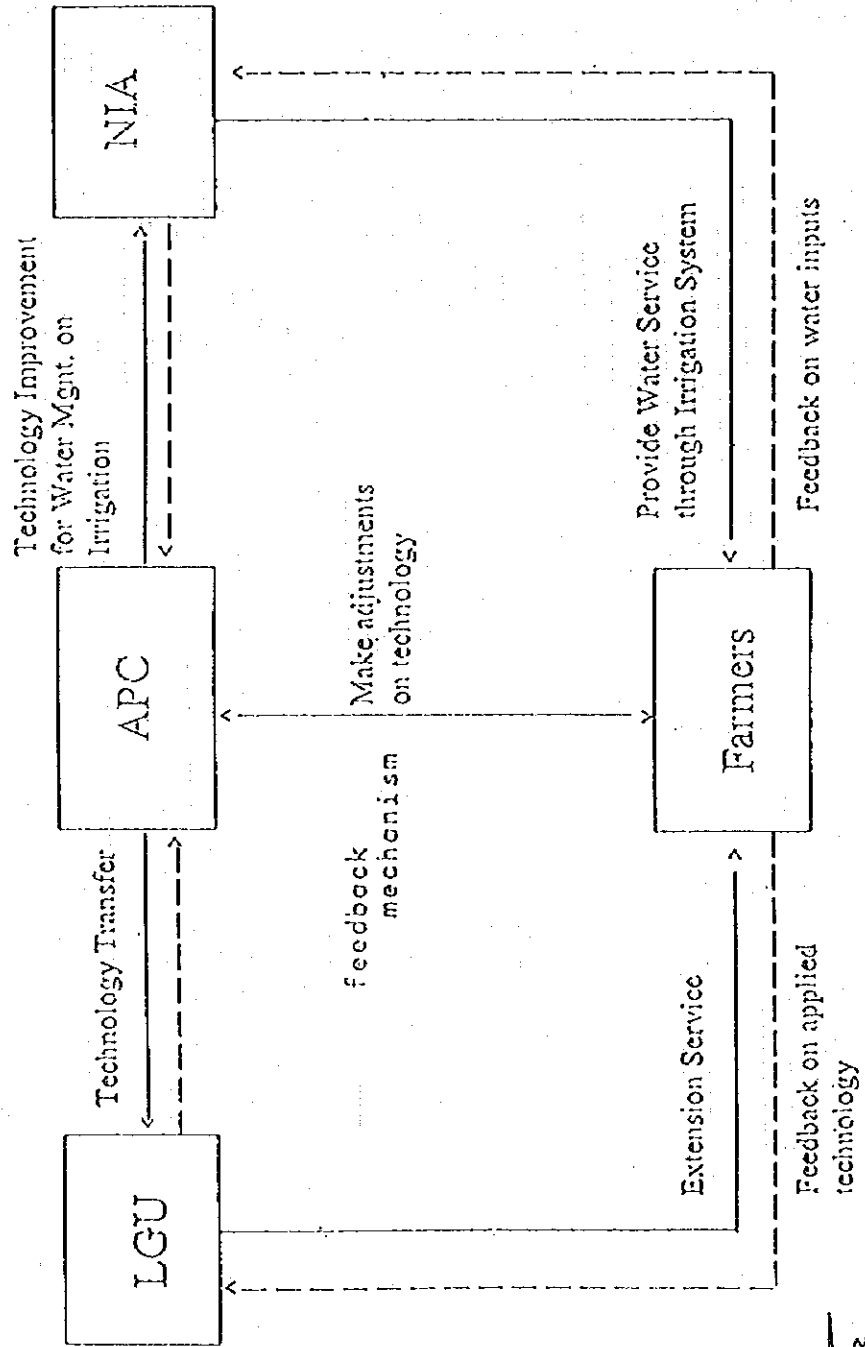


# PROJECT IMPLEMENTATION STRUCTURE B-APC PHASE II



*[Signature]* CIP - CAPAYAS IRRIGATION PROJECT  
IA - IRRIGATORS ASSOCIATION *[Signature]*

Model System of Linkage/Coordination



*Handwritten signature*

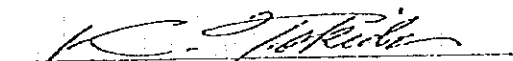
MINUTES OF UNDERSTANDING  
BETWEEN THE JAPANESE LONG-TERM STUDY TEAM  
AND THE AUTHORITIES CONCERNED OF THE GOVERNMENT OF  
THE REPUBLIC OF THE PHILIPPINES  
ON THE JAPANESE TECHNICAL COOPERATION FOR  
THE BOHOL AGRICULTURAL PROMOTION CENTER  
PROJECT PHASE II

The Japanese Long-Term Study Team (hereinafter referred to as "the Team"), organized by the Japan International Cooperation Agency (hereinafter referred to as "JICA"), and headed by Dr. Kunihiro Tokida, visited the Republic of the Philippines from May 13 to June 1, 1996 for the purpose of working out the details of the technical cooperation concerning the Bohol Agricultural Promotion Center Project Phase II (hereinafter referred to as "the Project") in the Republic of the Philippines.

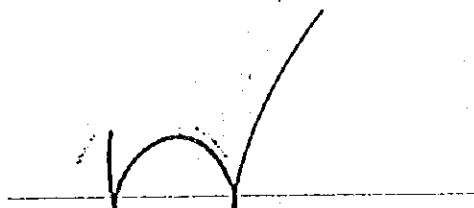
During its stay in the Republic of the Philippines, the Team conducted a field study, exchanged views and had a series of discussions in order to reach a common understanding on the issues concerned with the Project.

As the results of the discussions, the Team and the authorities concerned of the Republic of the Philippines reached the common understanding on the issues of the Project and agreed to report to their respective governments the matters contained herewith.

Manila, 29th of May, 1996



Kunihiro Tokida  
Team Leader  
Long-Term Study Team,  
Japan International Cooperation Agency,  
Japan



Domingo F. Panganiban  
Undersecretary  
Department of Agriculture,  
The Republic of the Philippines

ATTACHED DOCUMENT

JOINT STUDY REPORT ON  
THE BOHOL AGRICULTURAL PROMOTION CENTER  
PROJECT PHASE II  
(Tentative Title)

MAY 1996

AGRICULTURAL PROMOTION CENTER  
JICA LONG-TERM STUDY TEAM

*R.T.*

A handwritten mark consisting of a long, sweeping curve that starts from the bottom left, goes up and to the right, and then curves back down and to the left, ending near the top right. There is a small vertical tick mark on the upward-sloping part of the curve.

## TABLE OF CONTENTS

I.	BACKGROUND AND OBJECTIVES OF THE STUDY	102
II.	MEMBERS OF THE JOINT STUDY TEAM	102
III.	JOINT STUDY SCHEDULE	104
IV.	AGRICULTURAL PROMOTION CENTER'S CURRENT ACTIVITIES	105
V.	FINDINGS OF THE FIELD STUDY IN BOHOL	105
VI.	ANALYSIS AND DISCUSSION OF THE STUDY RESULTS	112
VII.	PROPOSED PROJECT FRAMEWORK	115
VIII.	PROPOSED TITLE	118
ANNEX I MASTER PLAN		119
ANNEX II LIST OF JAPANESE EXPERTS		120
ANNEX III LIST OF MACHINERY AND EQUIPMENT		120
ANNEX IV LIST OF PHILIPPINE COUNTERPART AND OTHER PERSONNEL		120
ANNEX V LIST OF LAND, BUILDINGS AND FACILITIES		121
ANNEX VI JOINT COORDINATING COMMITTEE		121

K-7.



## I. BACKGROUND AND OBJECTIVES OF THE STUDY

JICA implemented project type technical cooperation titled "THE BOHOL AGRICULTURAL PROMOTION CENTER PROJECT" (hereinafter referred to as "the Phase I" with the Bohol Agricultural Promotion Center (hereinafter referred to as "APC") from 1983 to 1990. Three divisions, namely, Research, Training and Extension were successfully involved in the Phase I from its inception, and appropriate technology has been transferred to APC staff and related personnel throughout this period.

After completion of the Phase I, individual experts have been dispatched to the agricultural extension and agronomy division in order to assist APC activities by providing supplemental technologies and knowledge needed.

In July 1995, A proposal for an Aftercare Program for the Phase I was submitted by the Philippine side. However, the proposal was too wide in scope to be covered by JICA's Aftercare Program. After discussions between the Philippine side and the Japanese Aftercare Study Team in January 1996, the Philippine side agreed to change the proposal from the Aftercare Program to the Project Type Technical Cooperation.

In April 1996, a proposal for the Project was submitted by the Government of the Republic of the Philippines to the Government of Japan.

The Team was dispatched to carry out a field study in order to compile data necessary for formulating a detailed framework of the Project.

Upon arrival of the Team, a Joint Study Team, composed of members of the Team and personnel of APC and concerned agencies, was formed for the purposes of:

1. Confirming the consensus of the Project concept among the people concerned.
2. Examining the possibility of the implementation of Japanese technical cooperation and the scope of that cooperation based on the results of the analysis and investigation.
3. Formulating a draft framework of the Project from the above results.

Details of the findings of the Joint Study Team are compiled in the Joint Study Report.

## II. MEMBERS OF THE STUDY TEAM

### A. JICA

Team Leader/ Farm Mechanization	Kunihiko TOKIDA	Development Specialist, Institute for International Cooperation, JICA
Water Management	Yoshinori SATOMI	Deputy Director, Land Improvement Technical Service Center of Kyushu Agriculture Administration Office, Ministry of Agriculture, Forestry and Fisheries

K.T.

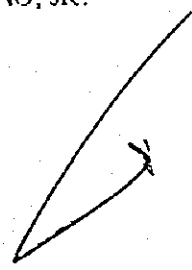
Fanner Organization/ Training	Kunihiko MASUMI	Technica Advisor, Association for International Cooperation of Agriculture and Forestry
Agronomy	Toshio SHIBATA	Special Advisor Agricultural Technica Cooperation Division, Agricultural Development Cooperation Department, JICA
Technical Cooperation	Masaaki NISHIGAKI	Associate Expert Agricultural Technical Cooperation Division, Agricultural Development Cooperation Department, JICA

B. Philippines

· Bohol Agricultural Promotion Center

Project Manager	Ricardo D. OBLENA	APC Project Manager / Assistant Regional Director for Region VII
Deputy Project Manager	Eugene C. CAHILES	
Farm mechanization staff	Daniilo L. ANGCLA	
Farm mechanization staff	Sergio M. SUMAOY	
Farm mechanization staff	Roxanna B. EPE	
Water Management staff	Antonio S. DU	
Water Management staff	Tito L. CANAS	
Water Management staff	Rufa O. DORIA	
Agronomy staff	Felix N. TUBIANO	
Agronomy staff	Ma. Wnecia B. EGAMA	
Agronomy staff	Jose M. BUNACHITA	
Agronomy staff	Rizalina C. CAHILES	
Training staff	Abdel B. APALISOK	
Extension staff	Edindo L. SAMBLACENO, JR.	
Extension staff	Alejandro R. PIEZAS	
Extension staff	Aurea M. MADRIO	

*K.T.*



· National Irrigation Administration (NIA)

Institutional  
Development  
Officer                      Camila A. DESCALLAR

· Department of Agriculture - International Agriculture Development  
Cooperation Coordination Office - Project Packaging Group

Project  
Development  
Officer IV                      Cecille ASTILLA

Project  
Development  
Officer II                      Melba GANZON

### III. JOINT STUDY SCHEDULE

May 15	Wednesday	Courtesy call to Vice Governor of Bohol Province
16	Thursday	Discussion with APC staff for the study objectives and schedule
17	Friday	Field survey in Ubay and Malinao
18	Saturday	Field survey in Ubay and Malinao
19	Sunday	Sum up data
20	Monday	Field survey in Ubay and Malinao
21	Tuesday	Field survey in Ubay and Malinao
22	Wednesday	Making report on the field study and presentation of the study results
23	Thursday	Discussion on frame work of the Project including problem analysis and report writing
24	Friday	Discussion with Philippine authorities at APC and summing up
25	Saturday	Move to Manila
26	Sunday	Sum up data
27	Monday	Discussion on the Joint Study Report
28	Tuesday	Discussion on the Joint Study Report
29	Wednesday	Signing of Minutes of Understanding

R.T.



#### IV. AGRICULTURAL PROMOTION CENTER'S CURRENT ACTIVITIES

For the past 11 years of the Technical Cooperation with Japan through JICA, the APC has been able to develop suitable crop technologies and innovative approaches in technology transfer which are being sustained up to the present. Such was achieved as the center activities revolved around an integrated research, extension and training system creating solutions to immediate constraints as agricultural development in the province. It is for the same reason that the APC was institutionalized under the Department of Agriculture with the station rationalization program in 1991.

Bohol Agricultural Promotion Center portrays a dual personality that of being a Research Outreach Station (ROS) and as a promotion center.

APC is the Regions ROS for lowland irrigated development zone. As such, its activities focus mainly on the conduct of research on technology verification (TV), technology adaptation (TA), technology generation (TG) within the research agenda for location specific requirements for rice.

APC provides technical services for the LGUs on a) on-site research projects, b) training on the conduct of research, c) technical supervision on research project implementation, d) initial foundation stock.

In addition, APC provides technical services for the implementation of technology dissemination (TD)/piloting activities such as a) training of LGU specialists, b) packaging research results for TD, c) providing prototype information material and, d) evaluating extensions and research strategies.

As a promotion center, APC undertakes similar activities of research, extension and training for commercial crops and livestock. It conducts market matching as well as holds agricultural fairs. Further, it is a national testing center for rice in collaboration with PhilRice.

APC has the distinction of being the frontline unit in the implementation of the Gintong Ani (Golden Harvest) Program for Rice for Central Visayas. Hence, it undertakes establishment of shallow tube wells, mechanical dryers, small water impounding projects, small farm reservoir, multi-purpose drying pavements, farm machinery demonstration, techno-demo for rice as well as conducts and facilitates Training of Trainers and Farmers Field Schools on Rice.

#### V. FINDINGS OF THE FIELD STUDY IN BOHOL

##### A. Agronomy

##### 1. Present Cropping Situation Under Irrigated Condition

##### (1) Rice Cultivation

About 54% of the Boholano rice farmers adopted the new HYVs (IR 68 to PSB release), 8.5% planted IR 66 while 8.5% still used local varieties. PSB Rc 18 (Ala) will be recommended in the Gintong Ani Program (GAP), so called "Golden Harvest" because of its high yield potential and good performance under Bohol condition.

Varieties planted in the Capayas Irrigation Project (CIP) areas include IR 72, IR 64, IR 66, IR 74, PSB Rc 10 and Burdagol. Most widely planted variety in the APC-assisted area was IR 74. Communal farms of the 13 NIA-BHIP Irrigators Association (Malinao Dam Project) planted IR 64, IR 36, IR 66, PSB Rc 4, IR 74, Burdagol and an introduced variety, Red 15.

Basically, no fertilizer is applied at the nursery except with very poor soils. Most GAP farmer-beneficiaries are willing to adopt the APC recommended fertilization rates. However, the rate of fertilizer depends upon the financial capacity of the farmer in general. Usually, one bag of urea is applied at panicle initiation. Although 68% still practice random planting, there is an increasing adoption of the straight row planting.

Rice bug, leafhopper, stemborer, green leafhopper and "kuhol" (golden apple snail) are the major

R. T.

pests of rice. The rice tungro virus (RTV) disease still persists to be prevalent in most irrigated rice areas. Rice blast, brown spot and sheath blight are also observed. To minimize pest damage, the Integrated Pest Management (IPM: Kasakalikasan) approach is currently reaching out to the farmers' level due to the conduct of farmers field schools.

Problems like zinc deficiency and salinity are also observed in some areas of the province. Continuous double cropping depletes soil nutrient in most rice producing municipalities. Also, weeds abound causing an estimated yield reduction of 11% if left unchecked.

In CIP, double cropping is practiced in the irrigated condition since wet season 1993. The straight row (one-way) planting is widely adopted in the area. Due to the difficulty in handweeding, improvised mechanical weeders are commonly used by farmers. Average grain yield production of the 139 respondents in Laterals A and B for the last three cropping seasons (DS 1995, WS 1995 and DS 1996) is 2.35 t/ha.

Majority (93%) of the rice farmers in Malinao (BHIP) still practiced random transplanting and only few did basal fertilizer application. The communal farms of the Malinao Irrigators Association yielded an average of 2.35 t/ha during the 1995 WS. Although, average yield in the BHIP area is 2.5 t/ha. Water is a limiting factor due to non-operational irrigation system.

## (2) Upland Crops and Vegetable Cultivation

Corn, the second staple food of the Boholanos, is grown three times a year in corn growing municipalities. Cassava has a good market potential due to the presence of a starch factory in Carmen. Ubi kinampay, sweet potato and mungbean are also planted in the upland areas of Bohol.

High-value vegetable crops like cabbage, chinese cabbage, carrots, cauliflower and bulb onion are starting to be popular in cooler areas. Due to its great market potential and longer storability, mass production of bulb onion is encouraged.

In CIP, corn cassava, sweet potato, vegetable, legume and some fruit trees are planted in small-scale. Big upland fields in BHIP are devoted to cassava due to its proximity to a starch processing factory. Corn, vegetable, legumes and other fruit trees are also planted in the upland areas.

## 2. Grains Production Enhancement Program (GPEP) and Gintong Ani Program (GAP)

Bohol APC, being one of the implementing arms of the DA Regional Field Unit-7 is spearheading the program implementation of GPEP in the province of Bohol. As GPEP frontliner, the following projects or activities such as production and distribution of certified seeds and establishment of rice techno-demo in cooperation with LGUs have been given full support.

For irrigation support, shallow tube wells and small reservoirs are made available to farmer organizations. Multipurpose drying pavements and mechanical dryers are also given as post harvest facilities. Hand tractor, floating tiller, transplanter, weeder, reaper, stripper harvester and blower will also be tested under actual field condition. Aside from rice, APC also leads in the implementation of Key Commercial Crop Development Project (KCCDP) for ubi, peanut and some vegetables.

Under GAP or GPEP IV, seed subsidy is no longer provided. Instead, uncollateralized credit is made available to farmers by the Land Bank of the Philippines through duly registered farmer organizations. In Bohol, APC rice technology will be used instead of the national recommendation.

APC activities in CIP are visible. These include area demonstration project with fertilizer support to the different IAs, techno-demo and technology adaptation trials.

In BHIP, APC extended technical assistance in the form of demo farm establishment as well as physical support in the form of fertilizer assistance in all of the 13 IAs starting WS 1990 until DS 1992.

K. T.

## B. Water Management

### 1. Capayas Irrigation Project

#### (1) Present Condition of Water Management

##### 1) Irrigation Method and Service Area

From the main canal, the irrigation water is distributed to the lateral canals. Then this water can be utilized by the farmer recipients through the farm ditches. Each lateral canal has an average of ten (10) to twenty (20) turn-outs; and each turn-out has a service area of five (5) to ten (10) hectares.

##### 2) Water Distribution Scheme at Main Canal

Operation of the control gates is done by one water tender. On Monday and Tuesday, release of water will be done with a maximum weir height of 35 cm; on Wednesday to Saturday, water to be released has a maximum weir height of 40 cm; while on the nights (5:00 pm - 5:00 am) of Thursday, Friday and Saturday, water to be released has a maximum weir height of 25cm. Water distribution in the four lateral canals is divided into three portions. The upper portion is scheduled to be irrigated on Monday and Tuesday, the middle portion is scheduled on Wednesday and Thursday and the tail-end portion is to be irrigated on Friday and Saturday. Sunday is free for all.

##### 3) Water Management on Farm Level

The practice of farmers in Capayas Project is that they irrigate their field as long as there is available water. There is no specific amount of water they require to their rice fields.

##### 4) Water Management in Relation to Cropping Calendar

- Land Preparation	= 35 cm depth of water released at Head Gate
- Growing Period	= 40 cm depth of water released
- During Rainy Days	= Gate is closed
- Fallow period (month of April)	= Gate is closed
- Dry Season = Land preparation	- last week of October
= Transplanting	- Nov. 1-15 for laterals A & B
	- Nov. 16-30 for laterals C, C1 & C2
- Wet Season = Land preparation	- last week of may
= Transplanting	- June 1-15 for laterals A & B
	- June 16-30 for laterals C, C1 & C2

#### (2) Present Condition of Irrigation Facilities

##### 1) Land Consolidation

For Capayas Project Stage I, the area to be consolidated is 430 ha. As of May, 1996, 34% or 146. has been completed. Land consolidation works will be resumed at the same time with the heel increasing construction (June-December 1996) and will continue up to two years. For Capayas Project Stage II, the total area to be consolidated is 410 ha. As of this date, there is no accomplishment. Land consolidation will be done when Bayongan Dan construction will start.

Land consolidation cost in Capayas Project:

- equipment - provided by JICA
- fuel and oil - farmer
- operator and technical guidance - NIA

If land consolidation is done by carabao, NIA will pay the farmer by P10,000.00 per ha. consolidated.

##### 2) Heel Increasing Construction Plan

The proposed Capayas Dan Improvement Project (2.5 meter Dam heightening) is scheduled to

R.T.

start its construction in June 1996 and to be finished in December 1996. During the construction period, the Capayas Reservoir will be drained / emptied to avoid the risk of construction, especially in terms of spillway improvement. Presently the reservoir is empty, thus, construction can be started. The additional volume of water is 1.8 million cu. m. With an original volume of 1.6 million cu. m., the total volume after heel increasing of Dam is 3.4 million cu. m. The estimated cost of increasing the Dam height is P25,000,000.00 from the Philippine Government.

### 3) Cropping Pattern and Present Area Planted

Monocropping with rice is practiced in the Capayas area. There are two plantings every year. At present around 465 ha. could be planted every season.

### 4) Maintenance of Irrigation Facilities and Service Fee

NIA is in-charge of the operation and maintenance of the main canal while the IA is in-charge of the operation and maintenance of the lateral canals. The irrigation fee is 175 kilograms of palay per hectare every season. This 175 kg is distributed as follows: 15% or 26 kg for IAs operation and maintenance of lateral canals, 10% or 17.5 kg for collector and 75% or 131.5 kg for NIA. Presently the actual collection rate of service fee is 50%. The reason for this is that the farmers have low production and some farmers say that they are not fully benefited by the water.

### 5) Condition of Irrigators Association (IA)

There are four (4) Irrigators Associations organized at Capayas Project to manage, operate and maintain the irrigation and other existing project facilities. There is one Institutional Development Officer (IDO) assigned by NIA. The IDO provides guidance and monitors the different IAs. Likewise, trainings/seminars are conducted with IAs to provide them with basic tools/skills in planning, water management, financial management, basic leadership skills, production technologies and other related subjects.

## 2. Bohol Irrigation Project, Malinao

### (1) Condition of BHIP

The construction of the Dam is already completed, so with the main canal and the lateral canals. Construction of farm ditches and land consolidation are on-going. The total area to be consolidated is 2,728 ha. As of May 1996, 8.5% or 233 ha. is already completed. Land consolidation is on-going and is expected to be completed by April 1998. The cost of land consolidation by bulldozer is P1,600.00 per hour + fuel and oil. This will be paid by the farmer without interest and will be amortized within ten years. Malinao Irrigation Project is not yet fully operational. Trial operation is undertaken this month of May. Hence, no detailed data on water management were gathered.

### (2) Condition of IA

There are fourteen (14) existing Irrigators Associations in the project. Seven (7) IDOs, one for every two IAs, are assigned by NIA to assist the IAs.

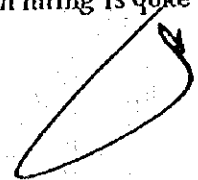
## C. Farm Mechanization

### 1. Farmers Mechanization Level

#### (1) Land Preparation

Land preparation activities like plowing, harrowing and levelling are mostly done by man-draft animals. The rate of plowing is 20 man-draft animals per hectare with an operation cost of P120.00 / day per man-draft animal. A few utilizes farm tractor and power tiller for land preparation, and among those few who own these machinery, majority are individual owners. Custom hiring is quite

R.T.



seldom in the area at a rate of P125.00 / h. Availability of draft animals / carabaos is diminishing due to the conversion of pasture land to paddies and residential areas, as well as the increasing demand of carabao meat in the market.

#### (2) Planting / Transplanting / Weeding

Nobody has used a mechanical transplanter or drum seeder. Majority of the farmers are having the random transplanting while only a few employ direct seeding. Straight-row planting is not widely adopted by the farmers in spite of their awareness on its advantages because they find it time consuming and laborious. However, rotary weeders are also used by quite a number of farmers who have straight-row rice fields.

#### (3) Harvesting / Threshing

Traditional method of harvesting and threshing is still prevalent in the area. Harvesting is done manually with the aid of a sickle, at a rate of 400 kg palay / ha. Although the farmers intend to introduce mechanical harvesters and threshers, they find it difficult to acquire such primarily due to the high cost of the machines and the lack of financial capability to purchase it. Pedal threshing is commonly employed by the farmers utilizing the locally available threshers with the present cost of P2,900.00 / unit. The rental is approximately 10-12 kg palay / day. On the other hand, there are still farmers who practice the indigenous method of threshing. Harvesting, threshing and cleaning operations as a package are mostly done by the farmers on contract basis with a 1:6 ratio (hired/contract laborer :owner).

#### (4) Drying

Solar drying is widely practiced by the farmers utilizing native mats, fish nets, plastic canvass and even ramie sacks, as well as multi-purpose drying pavements. Relatively this method is a contributing factor to post-production losses, especially when the weather during harvest season is unfavorable for solar drying.

#### (5) Milling

Majority of the farmers have their milling in a single-pass rice mill in their respective areas, and this is basically for their home consumption only. Huge bulk of paddy rice for milling could only be found at the heart of commercial area of a certain locality, and this refers only to the middlemen or businessmen. There are also ambulant rice mills in the area but a minority are still practicing the traditional method of pounding the rice. Milling cost is P0.50 / kg paddy rice.

#### (6) Comparison of Mechanization Level

Available agricultural machinery in CIP and BHIP were surveyed by interviewing presidents of IAs, and it was found that the level of agricultural mechanization is still low. The level of mechanization in BHIP is slightly higher than that in CIP.

### 2. Level of Locally Existing Engineering Technology

#### (1) Manufacturing

Farm implements like moldboard plows, comb-harrows are mostly made by the local shops. Small farm equipment and machines such as floating tiller (turtle tractor), power tillers, rotary weeder, pedal threshers and blowers are also manufactured locally. Though these are locally available, the quality is not that impressive and inferior compared to those branded ones. Likewise, the performance and life span is incomparable to the branded machines and equipment. Even if these machines and equipment are locally manufactured, the prices are still high due to high energy rates, substandard quality of materials used, lack of skilled workers and small fabricating machines.

R. T.

## (2) Repair Shop

There are quite a number of repair shops in the area and are mostly not specializing in agricultural machines. Hired welders and mechanics are on contract basis. Hence, they have limited and small equipment and machine for repairs.

## (3) Dealers / Distributors

Most of the engines and spare parts are imported. Some of the machinery and equipment are manufactured by other neighboring provinces in Visayas, Mindanao and Luzon. Branded equipment and machines are generally imported. Availability of spare parts is limited and there are only two licensed distributor or dealer in Tagbilaran City.

## 3. Needs on Farm Mechanization and Postharvest Technology

The status of agricultural mechanization at the provincial level as well as at the national level is generally minimal. With reference to rice commodity, majority of the farmers in Bohol are still adopting the traditional ways in production operations. In a sense, production operations demand labor intensive, high production cost, lesser efficiency, and at the same time would incur higher losses which redounds to lower farm net income. Consequently, it would also lead to inferior quality rice. In essence, among other factors of production, there is really a dire need to introduce and employ mechanization of farm operations in order to meet the present challenges in the agriculture sector in which self-sufficiency and food security must be attained and sustained.

With emphasis on postharvest technology, harvesting and threshing should be done with the use of machinery like reapers and thresher-blowers in order to reduce post-production losses, increase cost-effectiveness and efficiency in post-production and farm income.

Since the farmers are solely dependent on solar drying and the availability of concrete drying pavements within the area is very limited, apparently there is a need to introduce mechanical dryers. Hence, the same approach should hold through in introducing technology promotion to the farmers as aforesaid.

## D. Farmers Situation

### 1. Bohol Farming Economy

From the total area of 441,726 hectares of Bohol Province, 46% are devoted to agriculture. The agriculture sector has a 59% share of the total labor force. Practically, the province has the greatest potential as the food basket in the Central Visayas.

However, the province exhibits the highest poverty incidence at 43.43% higher than the regional figure (32%), and also the average monthly income of farmers which is at more than P2,000.00 only is way down below the national poverty threshold level of P6,000.00. From their average income, off-farm income is higher than the farm income. In developing Bohol's agricultural sector increase farm income and decrease in poverty incidence could be achieved.

### 2. Agricultural Assistance Program

Agricultural credit financing will be extended to the farmers without collateral by the Land Bank of the Phils. (LBP) through farmer cooperatives at an interest rate of 14% per annum. A duly CDA registered farmer cooperative can avail a maximum amount of up to six (6) times of its paid-up capital. Land Bank will also finance Rural Banks from where individual farmer borrowers can avail of Agricultural loans at an interest rate of usually 24-28 % per annum.

Irrigation support (STWs and small scale irrigation systems), farm machineries and equipment (mechanical dryers, small hand tractors with rotavator, floating tiller, mechanical transplanter, rotary weeders and reapers) are made available to farmer cooperatives and duly organized farmer

K. T.

associations through credit.

Infrastructure development such as farm-to-market roads and multipurpose drying pavements (MPDP) are directly funded by the DA through the LGUs. The recipients are organized farmer associations who will provide the labor and a 420 sq. m. land as their equity (MPDP).

Marketing assistance shall be provided through the National Food Authority (NFA) grains stabilization program budget. Purchases of palay will be done through farmer cooperatives.

Technology assistance and technology transfer are facilitated by trained and qualified agricultural workers through techno demos, trainings and other extension activities which can enhance the farmers' knowledge on farming.

To facilitate smooth flow of the implementation of these programs, institutional arrangement between DA and the LGUs are made through a Memorandum of Agreement (MOA). At the omnibus level, through the League of Provincial Governors and Mayors and at the operating level, between the DA Secretary, the Governors and Mayors through the Regional Directors.

### 3. Agricultural Office Structural and Functional Flow

As mandated in Republic Act 7160 (Local Government Code), Administrative supervision and extension services of the DA are devolved to the Local Government Units (Provincial & Municipal). The OPA is under direct supervision of the Governor while the Municipal Agricultural Officer is under the Municipal Mayor. In case of National Program, implementation is coursed through the Local Executives.

### 4. APC Linkages

The Bohol APC had always been the prime mover of the agricultural sector in the province. Collaborative researches and technology promotion had been facilitated, verified and transferred to the farmer clientele. National banner programs implementation are also dependent on the major role of APC. All these activities have been in close coordination with the LGU and other agencies thus ensuring effective and efficient delivery system.

### 5. Profile of Capayas Irrigation Project (CIP)

The CIP covers five (5) barangays of the municipality of Ubay and has four (4) registered Irrigator's Association (IA). Out of the total 525 registered members, only 143 members (27% of the total membership) had formed into a cooperative. The four (4) IAs are represented either as members and/or officers of the coop. Presently, the coop had a standing crop loan from Land Bank at P.5M with a very low repayment of 30% only. The CIP has a socio-economic problem which needs to be rehabilitated as soon as possible through efficient and effective institutional development.

While for irrigation facilities / structures, 42-67% (320 ha) actual paddies can be irrigated out of the total 750 hectares. Around 6% (46 ha) had been consolidated.

The average landholding size is 1.3 hectares of which rice is the dominant crop. The average rice yield obtained for the past two years is 2.35 tons per hectare.

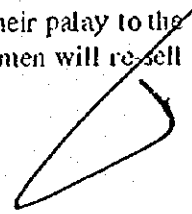
### 6. Bohol Irrigation Project (BHIP)

BHIP covers municipalities of Pilar, Dagohoy, Alicia, Ubay and San Miguel. It has fourteen (14) IAs distributed among the twenty-five (25) barangays of the covered municipalities with total registered members of 2,035. These IAs had been federated to form a coop. The total area consolidated is 2,728 hectares and as of May 1996, 8.50% or 233 hectares have been completed.

The average landholding size in the area is 1.25 hectares while the average crop cultivation acreage is 0.31 hectares of which rice is also the dominant crop. During the pre-irrigation stage, the average yield obtained was 2.50 tons per hectare.

In terms of marketing, majority of the farmers in the CIP and BHIP areas sell their palay to the local buyers (middlemen) within the farm site for convenience. In turn, the middlemen will resell

K.T.



their purchased palay to the wholesalers who usually take charge of the milling process then sell the milled rice either through the retailers or directly to the consumers.

## VI. ANALYSIS AND DISCUSSIONS OF THE STUDY RESULTS

### A. Agronomy

Improvement of location specific technologies for rice-based farming system under lowland irrigated ecosystem will be the main objective of the project. This farming system should consist of all fields of specialization in consideration of the socio-economic and agro-environmental conditions of the Capayas Irrigation Project Area.

At the national scope, updated package of technology in rice production to sustain area productivity will be developed by PhilRice during the implementation of GAP. However, the location-specific technologies developed by APC appropriate for Bohol agro-climatic conditions will be disseminated and handed down to the farmers level through APC's improved extension service and technology transfer programs.

The research activities of the Agronomy Division of APC will not be limited only to rice but will also consider the generation and improvement of location-specific rice-based farming systems considering other crops like vegetables and upland crops in cooperation with related technological fields. Proposed activities include varietal screening and adaptability tests, cultural management studies of cultivation techniques, research and development of cropping system, epidemiology studies, crop-water responses and post-harvest handling trials, studies on soil-related physiological problem and studies on the utilization of fibrous crop residues and supplemental feeding of UMMB in village-based livestock production.

Hence, the technology that goes with the irrigation project still needs to be developed and verified at the farmers level to determine its suitability, effectiveness and efficiency in the area. Much has to be done in terms of field trials in order to develop suitable farming system before these technologies are packaged for general adaptation.

While on-farm verification trials will go on, institutional strengthening should be undertaken to promote community action to the various future programs. Thus, smooth coordination between farmers and project implementors for effective and efficient technology transfer can be expected.

With these envisioned activities, rice-based farming system will be more wholistic in nature, developing both the farmers social and economic well-being. The strong networking between the different line agencies will ultimately help in the generation and formulation of location-specific rice-based farming system.

### B. Water Management

Capayas Irrigation Project (Stage I) was designed to irrigate 750 ha of paddy field. At present, with only 465 ha of paddy field service by the project, problem on water shortage was already experienced.

Proper operation of control gates and water scheduling were implemented in both main and lateral canals. However, efficient use of water in the farm is not practice. Farmers usually apply water as much as available in the farm ditches. There is no specific amount of water that is required to their rice fields.

There is therefore a need to establish an on-farm water management in order to efficiently use the available water resources, thereby maximizing the benefits that could be derived from the irrigation project.

R.T.



Capayas Irrigation Project was found to be a good site for the Water Management Program of the proposed project. The following were some factors that made Capayas Irrigation Project an ideal site:

1. The system is equipped with control gates and other structures that make water management studies not a problem;
2. There are existing facilities near the project such as meteorological stations, office building and staff houses;
3. The site is accessible by public transportation;
4. There is an existing collaboration / linkage between Bohol APC, NIA and LGU which could be further strengthen to carry out the activities necessary for the attainment of the objectives of the program;
5. Based from Bohol APC experiences, farmers in the project area are very cooperative in whatever activities undertaken; and
6. Farmers are already organized into four Irrigators Association.

The Malinao Irrigation Project was also evaluated as an alternative site for the Water Management Program. It was found out that in terms of facilities and personnel support, it is comparable to Capayas Irrigation Project. However, some setbacks were noted in Malinao Irrigation Project:

1. The service area is very big such that some areas may not be covered with the water management program in a span of five (5) years;
2. Progress in land development is minimal (8.5%) as compared with the Capayas Irrigation Project which is 34%. With the equipment provided by JICA, land development in Capayas area can be completed earlier;
3. Malinao Irrigation Project is not yet fully operational. Construction of main farm ditches is currently undertaken. Trial operation of the system on some completed lateral canals is scheduled this month of May; and
4. The cost of land consolidation in Malinao Project is all shouldered by the individual farmer. Whereas, the land consolidation cost in Capayas Project is much cheaper because the equipment is provided by JICA.

### C. Farm Mechanization

#### 1. Small Scale Mechanization

Rice paddy areas are smaller and irregular in shape. Hence, majority of the paddy fields are situated in a rolling topography whereby big machines like 4WD tractors are not feasible. An alternative for this condition is the use of small scale agricultural machinery. Few farmers have acquired small power tiller which are utilized for their own benefit, and as much as possible this practice has to be changed by enhancing farmers cooperative and communal use of agricultural machinery.

#### 2. Postharvest

Postharvest technology is a key factor in improving rice quality, thus more studies on harvesting, drying and storing have to be conducted.

#### 3. Technology Transfer

Technology transfer and training activities should focus on the utilization, management, operation and preventive maintenance as well as test and evaluation of agricultural machinery.

#### 4. Financial Capability

Majority of the farmers are not financially capable to buy agricultural machinery due to its high

K.T.

cost. Thus they should be encouraged to acquire machinery by facilitating their access to credit.

#### D. Farm Management

Cooperative principles was not visibly seen in the CIP & BHIP. In CIP, only 20% of its members formed into cooperative with low repayment of credit loan of 30% while the BHIP farmer-beneficiaries sell only a portion of their harvest to cooperative and a bigger portion is sold to the local traders.

At harvest time, farmers prioritized the purchase of luxury items rather than paying the loan from the financing institution.

Different agricultural assistance are extended to farmers like, credit financing, irrigation support, farm machinery and equipment, farm-to-market roads & multipurpose drying pavement, marketing assistance from NFA through cooperative and the generated technologies. However, these assistance are coursed through the Local Government Units.

Local traders extend no-collateral loans to farmers, lent money at land preparation and payment be made at harvest, higher buying prices compared to NFA, paid cash without the administrative papers. Prioritization of needs out from their income and availability of farm records have not been put into focus. Farmers have no enough knowledge about cooperative and federation.

Presently, the average yield in the CIP is only 2.35 ton/ha. The yield gap of more than 1.65 ton/ha was found lower compared to the APC demonstration farms at 4.0 tons/ha. This gap still persist until now despite of the ten cropping seasons of technology transfer activities like demonstration farms, farmers forum and crop technology trainings.

Considering the scenario, crop technology transfer alone could not ensure total adoption. Research directions need also to be guided by the social, economic and institutional conditions of the farmers. The institutional development and socio-economic aspects have to be given due consideration.

Bohol APC will strengthen the capability of institutionalizing the farmer beneficiaries by instilling the cooperative principles and imparting the totality of farm management.

#### E. Summary and Conclusion

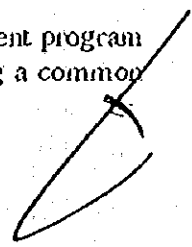
In addressing the paramount concern for food security, empowerment, global competitiveness and improved quality of life of farmers in irrigated areas, APC will enhance it services by:

1. developing technologies in the areas of water management, farm management, farm machinery and production technology;
2. strengthening its technical capability in the field of institutional development, psycho-social / economics aspects and technology dissemination; and
3. developing suitable integrated farming system lowland irrigated agriculture.

The above improvements will redound to i) production and productivity increase ii) increase farmers income iii) enhancement of product quality and iv) strengthening of extension workers and farmers institutional capabilities.

With this Philippine - Japan technical cooperation, a wholistic agricultural development program could be had. It will provide meaningful linkages, collaborating experiences portraying a common agenda in achieving national stability and growth.

K. T.



## VII. PROPOSED PROJECT FRAMEWORK

### A. COOPERATION BETWEEN BOTH GOVERNMENTS

1. The Government of the Republic of the Philippines will implement the Project in cooperation with the Government of Japan.
2. The Project will be implemented in accordance with the Master Plan which is given in Annex I.

### B. MEASURES TO BE TAKEN BY THE GOVERNMENT OF JAPAN

In accordance with the laws and regulations in force in Japan, the Government of Japan will take, at its own expense, the following measures through JICA according to the normal procedures under the Colombo Plan Technical Cooperation Scheme.

#### 1. DISPATCH OF JAPANESE EXPERTS

The Government of Japan will provide the services of the Japanese experts as listed in Annex II.

#### 2. PROVISION OF MACHINERY AND EQUIPMENT

The Government of Japan will provide such machinery, equipment and other materials (hereinafter referred to as "the Equipment") necessary for the implementation of the Project as listed in Annex III. The Equipment will become the property of the Government of the Republic of the Philippines upon being delivered C.I.F. to the Philippine authorities concerned at the ports and/or airports of disembarkation.

#### 3. TRAINING OF PHILIPPINE PERSONNEL IN JAPAN

The Government of Japan will receive the Philippine personnel connected with the Project for technical training in Japan.

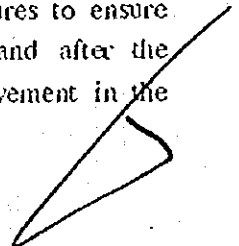
#### 4. SPECIAL MEASURES TO BE TAKEN BY THE GOVERNMENT OF JAPAN

To ensure the smooth implementation of the Project, the Government of Japan will take, in accordance with the laws and regulations in force in Japan, special measures through JICA with the purpose of supplementing a portion of the local cost expenditures necessary for the execution of the middle level trainees training program.

### C. MEASURES TO BE TAKEN BY THE GOVERNMENT OF THE REPUBLIC OF THE PHILIPPINES

1. The Government of the Republic of the Philippines will take necessary measures to ensure that the self-reliant operation of the Project will be sustained during and after the period of Japanese technical cooperation, through the full and active involvement in the

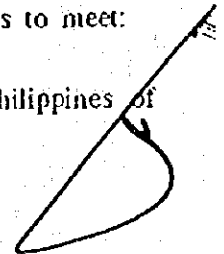
K. T.



Project by all related authorities, beneficiary groups and institutions.

2. The Government of the Republic of the Philippines will ensure that the technologies and knowledge acquired by the Philippine nationals as a result of the Japanese technical cooperation will contribute to the economic and social development of the Republic of the Philippines.
3. The Government of the Republic of the Philippines will grant in the Philippines privileges, exemptions and benefits to the Japanese experts referred to in B-1 above and their families no less favorable than those accorded to experts of third countries working in the Republic of the Philippines under the Colombo Plan Technical Cooperation Scheme.
4. The Government of the Republic of Philippines will ensure that the Equipment referred to in B-2 above will be utilized effectively for the implementation of the Project in consultation with the Japanese experts referred to in Annex II.
5. The Government of the Republic of the Philippines will take necessary measures to ensure that the knowledge and experience acquired by the Philippine personnel from technical training in Japan will be utilized effectively in the implementation of the Project.
6. In accordance with the laws and regulations in force in the Republic of the Philippines, the Government of the Republic of the Philippines will take necessary measures to provide at its own expense:
  - (1) Services of the Philippine counterpart personnel and other personnel as listed in Annex IV;
  - (2) Land, buildings and facilities as listed in Annex V;
  - (3) Supply or replacement of machinery, equipment, instruments, vehicles, tools, spare parts and any other materials necessary for the implementation of the Project other than the Equipment provided through JICA under B-2 above;
  - (4) Means of transport and travel allowances for the Japanese experts for official travel within the Republic of the Philippines;
  - (5) Suitably furnished accommodation for the Japanese experts and their families.
7. In accordance with the laws and regulations in force in the Republic of the Philippines, the Government of the Republic of the Philippines will take necessary measures to meet:
  - (1) Expenses necessary for the transportation within the Republic of the Philippines of

K-7.



the Equipment referred to in B-2 above as well as for the installation, operation and maintenance thereof;

- (2) Customs duties, internal taxes and any other charges, imposed in the Republic of the Philippines on the Equipment referred to in B-2 above;
- (3) All running expenses necessary for the implementation of the Project.

#### D. ADMINISTRATION OF THE PROJECT

1. Regional Director, Region VII, Department of Agriculture (hereinafter referred to as "DA"), will bear the authority and overall responsibility for the efficient and effective implementation of the Project.
2. Manager, Bohol Agricultural Promotion Center APC, as the Project Manager, will be responsible for the managerial and technical matters of the project.
3. The Japanese Team Leader (Chief Advisor) will provide necessary recommendations and advice to the Regional Director and the Project Manager on any matters pertaining to the implementation of the Project.
4. The Japanese experts will provide necessary technical guidance and advice to the Philippine counterpart personnel on technical matters pertaining to the implementation of the Project.
5. For the effective and successful implementation of technical cooperation for the Project, Committees will be established whose functions and composition are described in Annex VI.

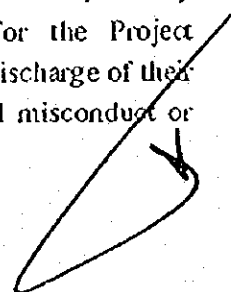
#### E. JOINT EVALUATION

Evaluation of the Project will be conducted jointly by the two Governments through JICA and the Philippine authorities concerned, at the middle and during the last six months of the Japanese technical cooperation period in order to examine the level of achievement.

#### F. CLAIMS AGAINST JAPANESE EXPERTS

The Government of the Republic of the Philippines undertakes to bear claims, if any arises, against the Japanese experts engaged in technical cooperation for the Project resulting from, occurring in the course of, or otherwise connected with the discharge of their official functions in the Philippines except for those arising from the willful misconduct or

*R.T.*



gross negligence of the Japanese experts.

#### G. MUTUAL CONSULTATION

There will be mutual consultation between the two Governments on any major issues arising from, or in connection with the Project.

#### H. MEASURES TO PROMOTE UNDERSTANDING AND SUPPORT TO THE PROJECT

For the purpose of promoting the support of the people of the Philippines to the Project, the Government of the Republic of the Philippines will take appropriate measures to make the Project widely known to the people of the Philippines.

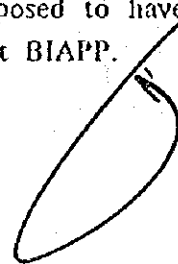
#### I. TERM OF COOPERATION

The duration of the technical cooperation for the Project under this Attached Document will be five (5) years.

#### VIII. PROPOSED TITLE

The Project aims to develop and promote rice-based farming system for farmers in Bohol by using integrated approach leading to increase in agricultural production and farm family income. However, the Project is tentatively titled "The Bohol Agricultural Promotion Center Project Phase II", and this does not appropriately represent objectives and contents of the Project activities. Thus, it is proposed to have a title of "The Bohol Integrated Agriculture Promotion Project", in short BIAPP.

K-7.



## ANNEX I MASTER PLAN

### 1. Objective of the Project

To develop and disseminate suitable rice-based farming system that will increase agricultural production and income for farmers in the Project sub site as well as to enhance product quality and food security.

### 2. The expected output of the Project

- (1) Rice-based farming system is established and adopted by farmers in the project sub-site
- (2) Technical capabilities of APC staff, extension workers and farmers are enhanced
- (3) Agricultural productivity and production are increased
- (4) Food security and quality of products are enhanced
- (5) Farmers institutional capability and agriculture resources management are enhanced
- (6) Income of farmers are increased

### 3. Activities of the Project

#### (1) Survey and Evaluation

- 1) Baseline study and evaluation of current situation
- 2) Research prioritization
- 3) Monitoring and evaluation

#### (2) Improvement of Location Specific Technologies for Rice-based Farming Systems

- 1) Cultivation technology
- 2) Cropping system
- 3) Postharvest
- 4) Operation and Maintenance of irrigation facilities
- 5) Development of an appropriate water management technology
- 6) Test and evaluation of existing farm machinery
- 7) Farm machinery utilization and management
- 8) Farm management technology

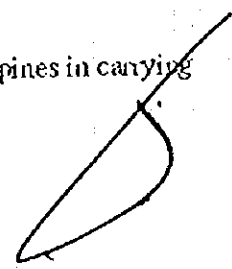
#### (3) Strengthening Technology Transfer

- 1) Dissemination of improved technology
- 2) Staff development / collaborative training for Local Government Units (LGU) and DA, Region VII technical personnel
- 3) Training for key farmers
- 4) Institutional development for farmers

### 4. Japanese Technical Cooperation

The Government of Japan will assist the Government of the Republic of the Philippines in carrying out the activities of the Project.

K-T.



5. Project Site

Bohol Agricultural Promotion Center, Tagbilaran, Bohol Province, Central Visayas

6. Project Sub-Site

Capayas, Bohol Province, Central Visayas

ANNEX II JAPANESE EXPERTS

Long-term experts will be dispatched as follows:

1. Team Leader
2. Coordinator
3. Agronomy
4. Water Management
5. Farm Mechanization
6. Farm Management

Note : Short-term expert(s) will be dispatched when necessity arises for the smooth implementation of the Project.

ANNEX III MACHINERY AND EQUIPMENT

Machinery and equipment necessary for the activities described above in B-2 for technical transfer will be provided by Japan. These are to include:

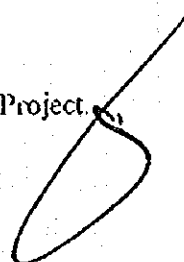
1. Agricultural machinery, equipment and spare parts
2. Vehicles necessary for technical cooperation activities
3. Teaching and communication materials including audio-visual equipment
4. Technical instruments and equipment
5. Other equipment necessary for technical transfer

ANNEX IV LIST OF PHILIPPINE COUNTERPART AND OTHER PERSONNEL

1. Project Manager : Manager, APC
2. Deputy Project Manager : Deputy Manager, APC
3. Counterpart (C/P) personnel for each field of long-term and short term experts  
(At least two full time C/Ps for each long-term expert)
4. Administrative Personnel
  - (1) Administration and accounting
  - (2) Secretary
5. Other necessary supporting staff(s)

Note : At least two C/P from NIA will be dispatched to the Project.

K-T.





## ANNEX V LIST OF LAND, BUILDINGS AND FACILITIES

1. Buildings, facilities and office space for the Project
2. Space for the machinery and equipment provided
3. Electricity and communication facilities
4. Other land, buildings and facilities necessary for the implementation of the Project

## ANNEX VI THE COMMITTEE

### 1. The Advisory Committee

#### (1) Functions

The Advisory Committee will meet whenever the need arises, and functions :

- 1) To provide policy directions and guidance for the activities of the Project.
- 2) To evaluate the overall progress and achievement of the Project.

#### (2) Composition

The Advisory Committee is composed of :

##### 1) Chairperson :

DA Undersecretary for Field Operations, Research and Training

##### 2) Co-Chairperson :

Resident Representative, JICA Philippine Office

##### 3) Members:

- a) Representative from DA-PMS(Planning and Monitoring Service) Project Packaging Group
- b) National Economic Development Authority (NEDA) Project Monitoring Staff
- c) Representative from National Irrigation Administration (NIA) Central Office
- d) Representative from Embassy of Japan
- e) Regional Director, DA, Region VII
- f) Governor, Bohol Province
- g) Project Manager, APC
- h) Japanese Team Leader
- i) Assigned personnel by JICA Philippine office, if necessary

### 2. The Joint Committee

#### (1) Functions

The Joint Committee will meet at least once a year and whenever the need arises, and functions :

- 1) To provide directions and guidance for the activities carried out by the Project and to coordinate interrelated activities within the DA and other related organization :
- 2) To review and approve the Annual Work Plan of the Project to be formulated under the framework of the Record of Discussions :

K-T.

- 3) To review the overall progress of the technical cooperation program and the level of achievement of the Annual Work Plan :
- 4) To review and exchange views on major issues arising from or in connection with the Project.

(2) Composition

The Joint Committee is composed of :

- 1) Chairperson :  
Regional Director, DA, Region VII
- 2) Co-Chairperson :  
Japanese Team Leader
- 3) Philippine Side :
  - a) Representative from DA-PMS Foreign Assisted Project Monitoring Division (RPDD)
  - b) Provincial Agricultural Officer, LGU
  - c) Superintendent, Central Visayas Integrated Agricultural Research Center (CENVIARC)
  - d) Project Manager, APC
  - e) Representative from NEDA Region VII
  - f) NIA Provincial Manager
  - g) Provincial Planning and Development Officer
  - h) Sangguniang Panlalawigan for Agriculture (Provincial Board Member for Agriculture)
  - i) Mayor, Municipality of Ubay
- 4) Japanese Side :
  - a) Japanese Experts
  - b) Representative from JICA Philippine Office
  - c) Personnel concerned to be dispatched by JICA, if necessary.

Note : If the member of either the Advisory Committee or the the Joint Committee described above can not attend the meeting, a representative can attend the meeting in place of the regular member.

Person(s) admitted by Chairperson and Co-Chairperson may attend the meeting.  
Official(s) of the Embassy of Japan may attend the Joint Committee as observer(s).

K-T.

APPENDIX I TENTATIVE SCHEDULE OF IMPLEMENTATION OF THE PROJECT

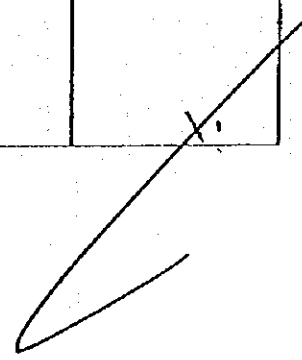
1. Activities of the Project

Item / Activities	Schedule (Year)					Remarks
	1st	2nd	3rd	4th	5th	
(1) Survey and Evaluation						(1) Survey and Evaluation will be conducted in Capayas and related area.
1) Baseline study and Evaluation of current situation						
2) Research prioritization						
3) Monitoring and Evaluation						
(2) Improvement of Location Specific Technologies for Rice-based Farming System						
1) Cultivation technology						
2) Cropping system						
3) Postharvest						
4) Operation and maintenance of irrigation facilities						
5) Development of appropriate water management technology						
6) Test and evaluation of existing farm machineries						
7) Farm machinery utilization and management						
8) Farm management technology						

K-T.

Item / Activities	Schedule (Year)					Remarks
	1st	2nd	3rd	4th	5th	
(3) Strengthening Technology Transfer						
1) Dissemination of improved technology to farmers						
2) Staff development /collaborative training for LGUs, technical personnel of DA in Region VII and NIA						
3) Training for key farmers						
4) Institutional development for farmers						

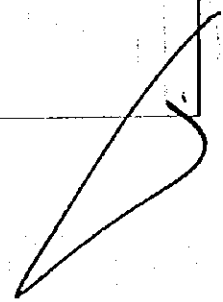
R-T.



2. Technical Cooperation Program (Japanese Side)

Item / Activities	Schedule (Year)					Remarks
	1st	2nd	3rd	4th	5th	
1. Long-term experts: 1) Team Leader 2) Coordinator 3) Agronomy 4) Water Management 5) Farm Mechanization 6) Farm Management						
2. Short-term experts (when necessity arises)						
3. Equipment and Machinery 1) Agricultural machinery, equipment and spare parts 2) Vehicles necessary for technical cooperation activities 3) Teaching and communication materials including audio-visual equipment 4) Technical instruments and equipment 5) Other equipment necessary for Technical transfer						
4. Acceptance of Philippine Personnel relating to the Project for Training in Japan						

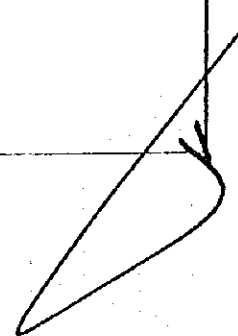
K-T.



3. Technical Cooperation Program (Philippine side)

Item / Activities	Schedule (Year)					Remarks
	1st	2nd	3rd	4th	5th	
<p>1. Counterparts</p> <p>1) Project Manager</p> <p>2) Deputy Project Manager</p> <p>3) Counterpart personnel for each field of long-term and short-term experts (At least two full time C/Ps for each long-term expert)</p> <p>1) Administrative personnel</p> <p>2) Other necessary supporting staff</p>						At least two C/P from NIA will be dispatched to the Project
<p>2. Land, Buildings, Facilities</p> <p>1) Building, facilities and office space for the Project</p> <p>2) Space for the machinery and equipment provided</p> <p>3) Electricity and communication facilities</p> <p>4) Other land, buildings and facilities necessary for the implementation of the Project</p>						
<p>3. Running Expenses</p> <p>All running Expenses for the Project such as salary, maintenance cost, spare parts, transportation, housing, fuel, electricity, etc.</p>						
<p>4. Other</p> <p>Establishment and management of the Advisory and Joint Committee</p>						

R-7



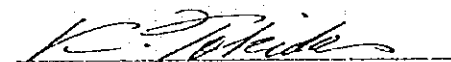
MINUTES OF UNDERSTANDING  
BETWEEN THE JAPANESE LONG-TERM STUDY TEAM  
AND THE AUTHORITIES CONCERNED OF THE GOVERNMENT OF  
THE REPUBLIC OF THE PHILIPPINES  
ON THE JAPANESE TECHNICAL COOPERATION FOR  
THE BOHOL INTEGRATED AGRICULTURE PROMOTION PROJECT

The Japanese Long-Term Study Team (hereinafter referred to as "the Team"), organized by the Japan International Cooperation Agency (hereinafter referred to as "JICA"), visited the Republic of the Philippines from August 5 to August 10, 1996 for the purpose of working out the details of the technical cooperation program concerning Bohol Integrated Agricultural Promotion Project in the Republic of the Philippines (hereinafter referred to as "the Project").

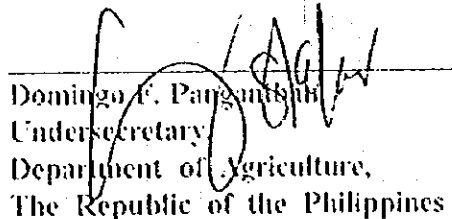
During its stay in the Republic of the Philippines, the Team exchanged views and had a series of discussions with the authorities concerned of the Government of the Republic of the Philippines (hereinafter referred to as "the Philippines Authorities") and conducted a field study with respect to the various issues for sharing the common understanding on the Project.

As the results of the discussions, the Team and the Philippines Authorities reached the common understanding to report to their respective Governments the matters referred to in the document attached hereto.

Manila, August 9, 1996

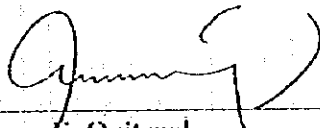


Kunihiko Tokida  
Project Management,  
Long-Term Study Team,  
Japan International Cooperation Agency,  
Japan



Domingo A. Pangantuhan  
Undersecretary  
Department of Agriculture,  
The Republic of the Philippines

Witness



Jose F. Quitizol  
Officer in Charge/Director,  
Regional Field Unit VII,  
Department of Agriculture,  
The Republic of the Philippines

## ATTACHED DOCUMENT

### 1. Background and Objectives

JICA dispatched the first Long-Term Study Team (hereinafter referred to as "the first Team") from May 13 to June 1, 1996. During that stay in the Republic of the Philippines, the first Team formulated a draft framework of the Project from the result of discussion with the Philippines Authorities and signed on the Minutes of Understanding.

After the first Team returned to Japan, the authorities concerned of the Government of Japan (hereinafter referred to as "the Japanese Authorities") had a discussion based on the report of the first Team. During the discussion, the Japanese Authorities indicated that some items concerning APC activities should be confirmed and the draft framework of the Project should be revised for a smoother implementation of the Project. As the result of discussion, JICA decided to conduct a study for further discussion with the Philippines Authorities.

The Team was dispatched in order to explain the revised framework of the Project, to have a common understanding with the Philippines Authorities on the framework and to clarify some items concerning APC activities.

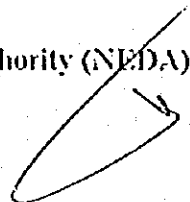
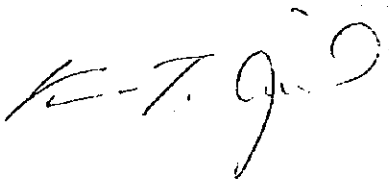
### 2. Member of The Team

Project Management: Kunihiko TOKIDA  
Development Specialist,  
Institute for International Cooperation, JICA

Technical Cooperation: Kanako MORIGUCHI  
Staff,  
Agricultural Technical Cooperation Division,  
Agricultural Development Cooperation Department,  
JICA

### 3. Summarized Study Schedule

August 5	Monday	Arrive in Manila Courtesy call on Mr. Rolando G. Tungpalan, Director Project Monitoring Staff, National Economic and Development Authority (NEDA)
----------	--------	--





- |   |           |  |
|---|-----------|--|
| 6 | Tuesday   | Leave Manila for Tagbilaran<br>Meeting with Officer in Charge/ Director, Region VII-<br>Department of Agriculture and APC Staff                              |
| 7 | Wednesday | Meeting with APC and National Irrigation<br>Administration (NIA) Staff   |
| 8 | Thursday  | Visit APC Station, techno-demo farm and Project Sub-<br>Site<br>Leave Tagbilaran for Cebu  |
| 9 | Friday    | Leave Cebu for Manila<br>Meeting and Signing of Minutes of Understanding with<br>Mr. Domingo F. Panganiban, Undersecretary<br>Department of Agriculture (DA) |

#### 4. Results of Discussion

##### (1) Follow-up of the Bohol Agricultural Promotion Center Project (the Phase I)

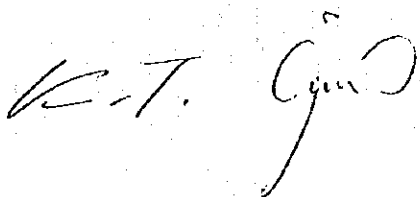
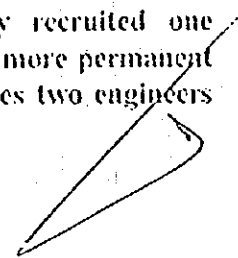
As the follow-up activities of the Phase I, the Project is able to invite extension workers and key farmers in the area of the Phase I to APC as well as those in Capayas, and Japanese experts may give them necessary technical assistance in the training program. Except for such follow up activities, Japanese experts will not give direct assistance to the farmers in the Phase I areas but concentrate on the activities in Capayas Area.

APC will provide additional budget for the training activities to support the Phase I. The Japanese Government will provide a portion of the local cost expenditures necessary for the execution of the training program.

APC will provide necessary maintenance budget for the equipment and machinery provided by JICA in the Phase I.

##### (2) Assignment Plan of Counterparts

The Philippines Authorities recognized that water management and farm mechanization are very important in the Project. APC newly recruited one permanent technical staff for water management and will recruit two more permanent technical staff for water management and farm mechanization besides two engineers seconded from NIA.

### (3) Organization of the APC

During the stay of the first Team, APC had a proposed organization for the Project with four major technical disciplines, water management, farm machinery, agronomy and technology transfer. However, APC discussed on the issue further and have agreed to maintain its present organizational structure as shown in ANNEX I. Such structure will preclude any confusion of the relations among APC staff, extension workers, farmers and the personnel in related organizations. It will likewise facilitate the institutionalization of the Project as a part of the Center's regular function and hasten the actualization of its future plans.

### (4) Future Plan of APC

Among nine thematic areas within the Medium Term Agricultural Development Plan (MTADP), four areas are concerned with APC's functions and operations:

- 1) irrigation, land and water management,
- 2) research, training and support services,
- 3) agricultural mechanization and post-harvest development; and
- 4) grains improvement, including product quality, strengthening and capability building of farmers and cooperatives.

At the regional level, the vision is for the farming communities to have an improved quality of life triggered by improved water management, farm mechanization and efficiency in farm management. In essence, the rural community has also matured in farmers' entrepreneurship and agribusiness skills such that the progress of the agriculture sector is largely influenced and managed by farmers.

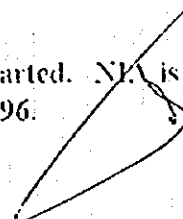
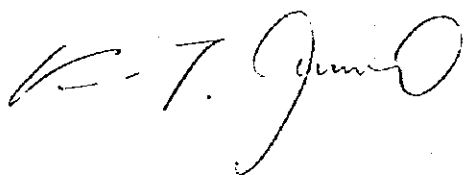
In line with this, APC's future plans is toward ensuring

- 1) a continuous research and development activities for lowland irrigated zone and
- 2) a systematic transfer of technologies using appropriate methodologies.

After completion of the Project, APC will maintain the three divisions as shown in the 15-year operational trend shown in ANNEX II. In addition, APC is planning to expand its functional activities by developing APC as an Agricultural Mechanization Center and an On-Farm Water Management Center besides the improvement and sustenance of the management of regular activities.

### (5) Progress of the Capayas Dam Heightening Construction

The construction and mobilization of equipment and personnel have started. NIA is expecting to complete the construction work by the end of December 1996.



**(6) Master Plan**

The master plan of the Project was revised as indicated in ANNEX III.

**(7) Linkage with Other Organizations**

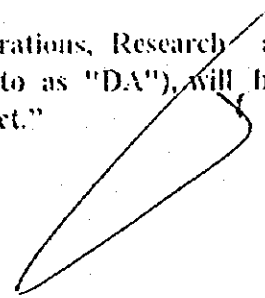
The linkage diagram of APC with other organizations are shown in ANNEX IV.

**(8) Project Administration**

As stated in the Joint Study Report on The Bohol Agricultural Promotion Center Project Phase II (Tentative Title) which is an appendix of the signed Minutes of Understanding on May 29, 1996, the Chairperson of the Advisory Committee of the Project is the Undersecretary for Regional and Field Operations, Research and Training, Department of Agriculture. However, his/her responsibility was not indicated in the project framework of the above report. It is more appropriate to state the following paragraph in the Administration of the Project of the framework

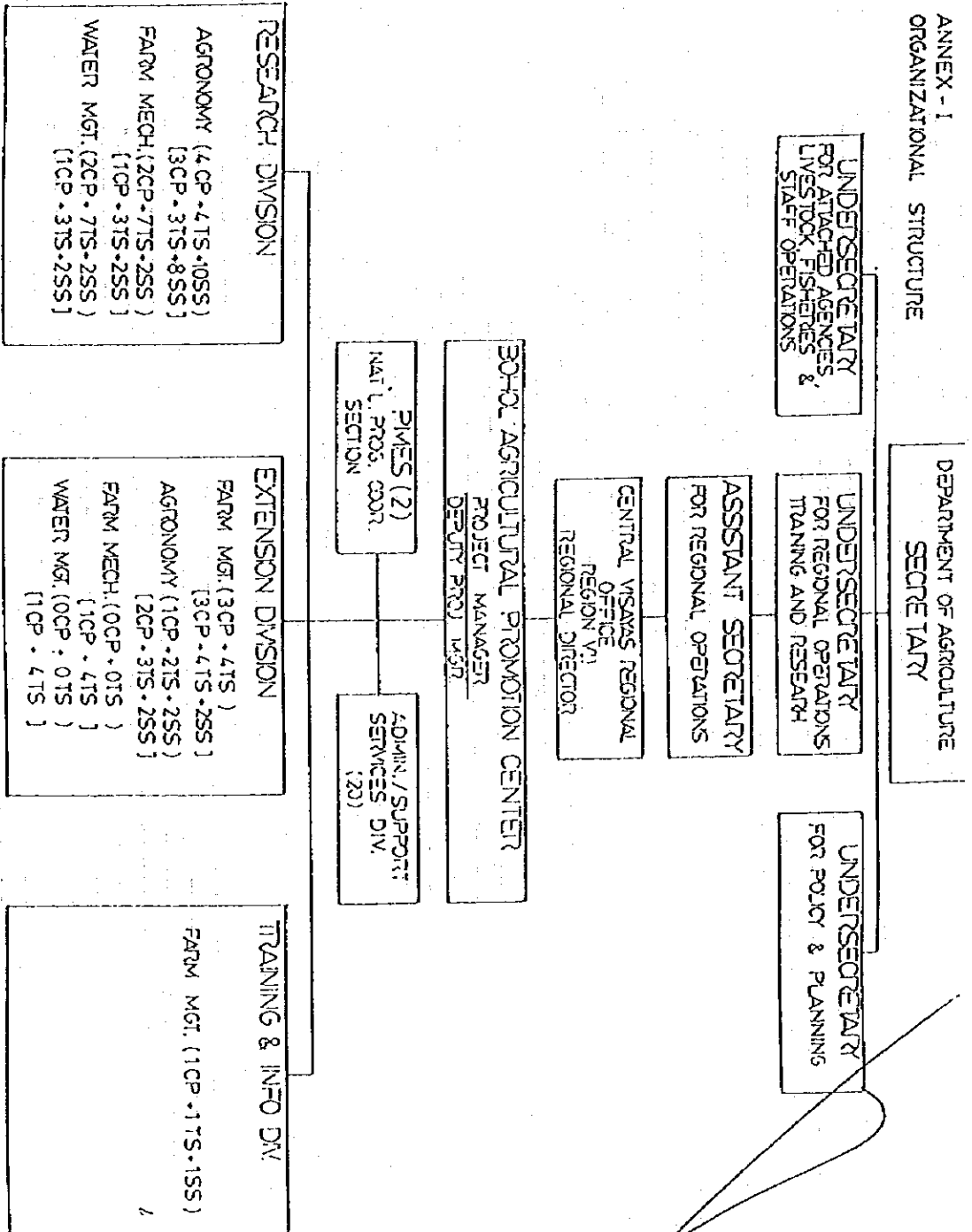
"Undersecretary for Regional and Field Operations, Research and Training, Department of Agriculture (hereinafter referred to as "DA"), will bear overall responsibility for the implementation of the Project."

*R.T.*



*Gen E*

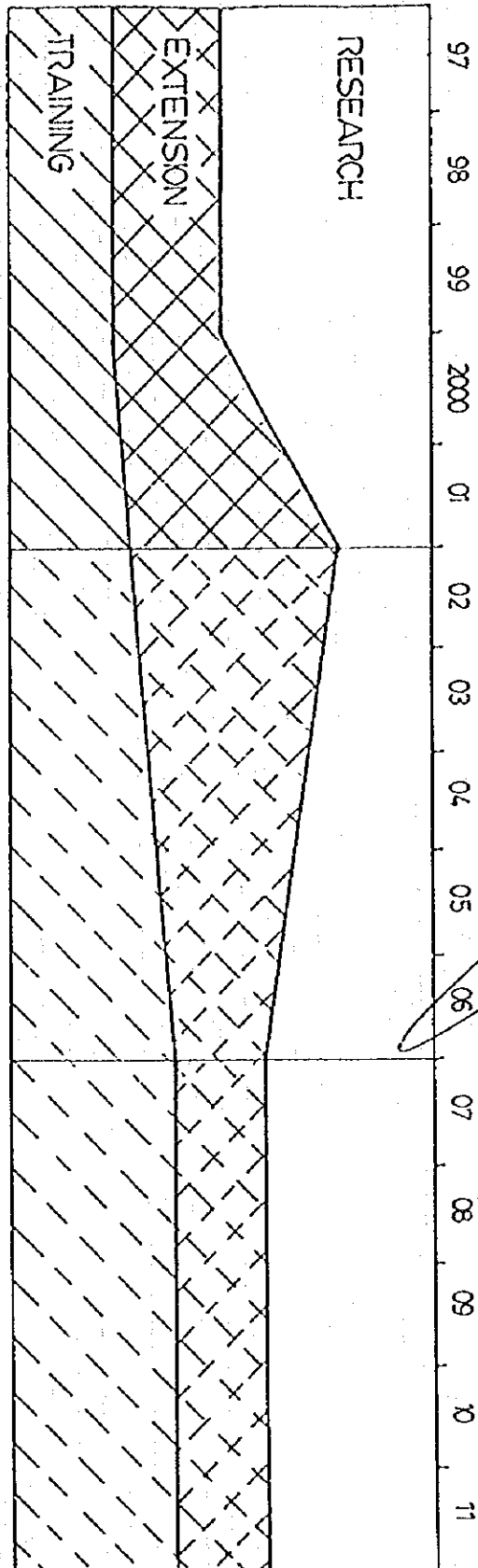
ANNEX - I  
ORGANIZATIONAL STRUCTURE



CP - COUNTERPART  
TS - TECHNICAL STAFF  
SS - SUPPORT STAFF  
( ) - MANPOWER COMPLEMENT AT EARLY STAGE OF PROJECT.  
[ ] - MANPOWER COMPLEMENT ON LAST YEAR OF PROJECT.

*R.T. Jimin*

ANNEX - II 15 YEAR OPERATIONAL TREND OF APS



*K. T. J...*

## ANNEX III MASTER PLAN

### 1. Overall Goal

Agricultural production and income of farmers in Bohol are increased.

### 2. Objective of the Project

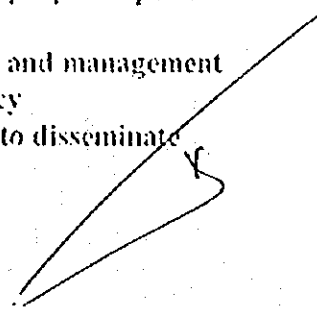
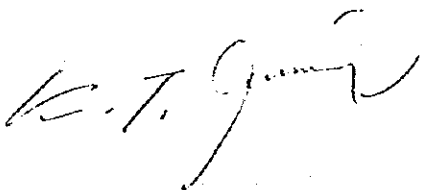
Agricultural productivity is increased by improving management of farming activities in the Project Sub-site.

### 3. The expected output of the Project

- (1) Baseline survey and monitoring can be conducted by APC staff
- (2) Improved location specific technologies for a Rice-based Farming System are adopted in the Project sub-site
- (3) Effective management of farming activities are carried out in the Project Sub-site
- (4) Technical capabilities of extension workers and key farmers in Bohol are enhanced
- (5) Agricultural promotion system is improved by enhanced collaborative linkages of APC with Local Government Unit ( hereinafter referred to as LGU) and concerned organizations

### 4. Activities of the Project

- (1) Formulation of a detailed work plan based on the baseline survey and conduct of the monitoring of Project achievement
  - 1) To conduct a baseline survey
  - 2) To prepare the project activity plan and prioritize research subjects
  - 3) To conduct monitoring of the project
- (2) Improvement and dissemination of location specific technologies for a Rice-based Farming System in the Project sub-site
  - 1) To improve cultivation technology
  - 2) To improve cropping systems
  - 3) To develop appropriate water management technology
  - 4) To improve the operation and maintenance system of irrigation facilities
  - 5) To test farm machinery and identify appropriate postharvest facilities
  - 6) To improve farm machinery utilization and management
  - 7) To improve farm management efficiency
  - 8) To enhance extension activity in order to disseminate appropriate technology



- (3) Improvement of management capability of farmers in the Project Sub-site
  - 1) To enhance farmers' organizations (Irrigators' Association, etc.) in the Project sub-site towards self-reliance
  - 2) To provide practical management skills
- (4) Enhancement of training
  - 1) To train agricultural extension workers of LGU
  - 2) To train key farmers in Bohol
- (5) Enhancement of collaborative linkage of APC with LGU and concerned organizations in carrying out the Project activities of (1) to (4) above
  - 1) To clarify the roles of LGU and the concerned organizations
  - 2) To enhance collaborative linkage of APC with LGU and concerned organizations

#### 5. Japanese Technical Cooperation

The Government of Japan will assist the Government of the Republic of the Philippines in carrying out the activities of the Project.

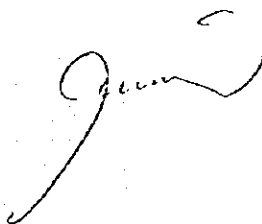
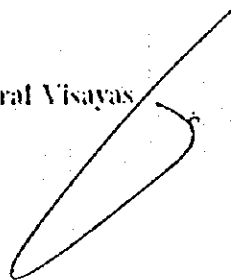
#### 6. Project Site

Bohol Agricultural Promotion Center, Tagbilaran, Bohol Province, Central Visayas

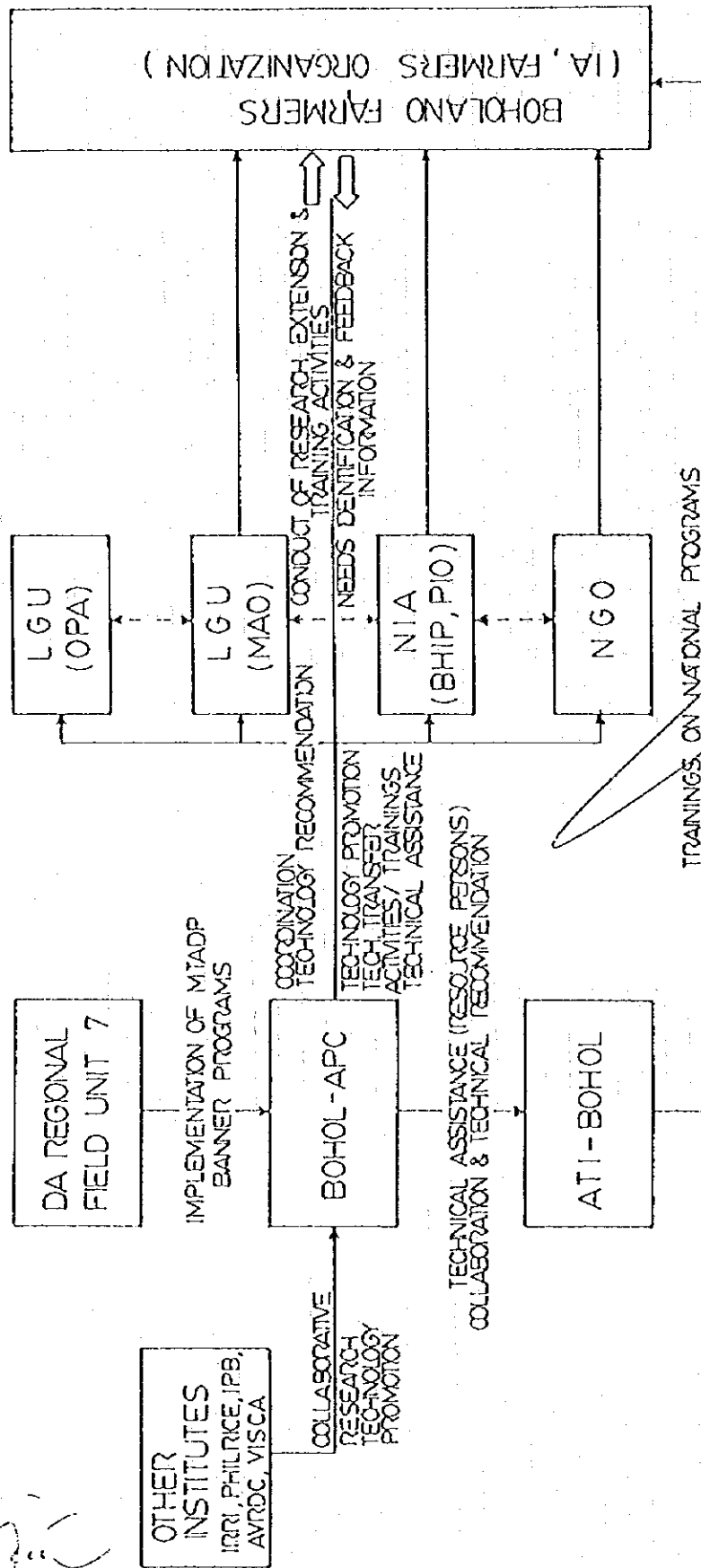
#### 7. Project Sub-Site

Capayas, Bohol Province, Central Visayas

*K.T.*



ANNEX - IV SCHEMATIC DIAGRAM OF BOHOL-APC LINKAGES





**ANNEX V Philippine Officials and Staff Met by the Team :**

**A. Department of Agriculture, Office of the Secretary**

**Domingo F. Panganiban** Undersecretary for Regional & Field Operations, Research and Training

**Cecilia Q. Astilla** Project Development Officer IV  
IADCCO - Project Packaging Group

**Susana V. de Guzman** Project Development Officer II  
IADCCO - Project Packaging Group

**B. Department of Agriculture - Regional Field Unit VII**

**Jose F. Quitazol** Officer-in-Charge/ Director

**C. Bohol Agricultural Promotion Center**

**Ricardo D. Ohlena** Officer-in-Charge/ Assistant Director  
and Project Manager, APC

**Eugene C. Cahiles** Deputy Project Manager

**Abdel B. Apalisok** Chief - Training & Information Division

**Antonio S. Du** Chief - Research Division

**Alejandro R. Piezas** Chief - Extension Division

**Naoki Iguchi** JICA Expert

**Mary Jean C. Du** Section Head - Rice Research

**Rizalina G. Cahiles** Section Head - Vegetable Research

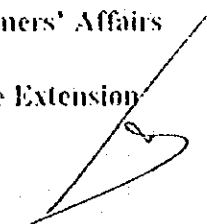
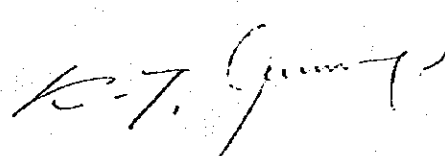
**Edwin D. Palgan** Section Head - Upland Crops Research

**Evelina S. Leyble** Head - Soils Laboratory

**Marlene C. Cubero** Head - PMES

**Aurea M. Madrio** Section Head - Farmers' Affairs

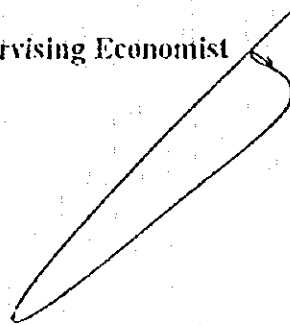
**Erlindo E. Samblaceno Jr** Section Head - Rice Extension



Rolando T. Alaan	Officer-in-Charge - Vegetable Extension
German M. Makiling	Section Head - Upland Crops Extension
Alexander P. Dohig	Head - General Services Unit

D. National Economic Development Authority - Central Office

Rolando G. Tungpalan	Director, Project Monitoring Staff
Edna N. Capacillo	Supervising Economist



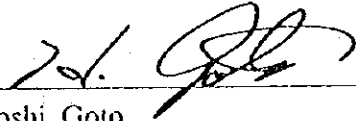
*R.T. German D*

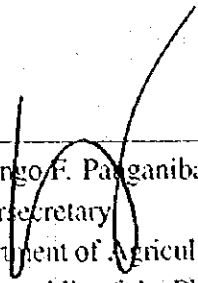
RECORD OF DISCUSSIONS  
BETWEEN THE AUTHORITIES CONCERNED OF  
THE GOVERNMENT OF JAPAN  
AND THE GOVERNMENT OF THE REPUBLIC OF THE PHILIPPINES  
ON THE JAPANESE TECHNICAL COOPERATION FOR  
THE BOHOL INTEGRATED AGRICULTURE PROMOTION PROJECT

Japan International Cooperation Agency (hereinafter referred to as "JICA") with regard to the recommendation of the Minutes of Understanding of the Long-Term Study on May 29, 1996 and August 9, 1996, had a series of discussions through the Resident Representative of JICA in Manila with the authorities concerned of the Government of the Republic of the Philippines in view of desirable measures to be taken by both Governments for the Japanese technical cooperation program concerning the Bohol Integrated Agriculture Promotion Project in the Republic of the Philippines.

As a result of the discussions, JICA and the authorities concerned of the Government of the Republic of the Philippines agreed to recommend to their respective Governments the matters referred to in the document attached hereto.

Manila, October 16, 1996

  
Hiroshi Goto  
Resident Representative  
Japan International Cooperation Agency  
Philippines Office

  
Domingo F. Panganiban  
Undersecretary  
Department of Agriculture  
The Republic of the Philippines

## ATTACHED DOCUMENT

### I. COOPERATION BETWEEN BOTH GOVERNMENTS

1. The Government of the Republic of the Philippines will implement the Bohol Integrated Agriculture Promotion Project (hereinafter referred to as "the Project") in cooperation with the Government of Japan.
2. The Project will be implemented in accordance with the Master Plan which is given in Annex I.

### II. MEASURES TO BE TAKEN BY THE GOVERNMENT OF JAPAN

In accordance with the laws and regulations in force in Japan, the Government of Japan will take, at its own expense, the following measures through JICA according to the normal procedures under the Colombo Plan Technical Cooperation Scheme.

#### 1. DISPATCH OF JAPANESE EXPERTS

The Government of Japan will provide the services of the Japanese experts as listed in Annex II.

#### 2. PROVISION OF MACHINERY AND EQUIPMENT

The Government of Japan will provide such machinery, equipment and other materials (hereinafter referred to as "the Equipment") necessary for the implementation of the Project as listed in Annex III. The Equipment will become the property of the Government of the Republic of the Philippines upon being delivered C.I.F. to the Philippine authorities concerned at the port(s) and/or airport(s) of disembarkation.

#### 3. TRAINING OF PHILIPPINE PERSONNEL IN JAPAN

The Government of Japan will receive Philippine personnel connected with the Project for technical training in Japan.

#### 4. SPECIAL MEASURES TO BE TAKEN BY THE GOVERNMENT OF JAPAN

To ensure the smooth implementation of the Project, the Government of Japan will take, in accordance with the laws and regulations in force in Japan, special measures through JICA for the purpose of supplementing a portion of the local cost expenditures indispensable for the execution of the middle level trainees training program.

### III. MEASURES TO BE TAKEN BY THE GOVERNMENT OF THE REPUBLIC OF THE PHILIPPINES

1. The Government of the Republic of the Philippines will take necessary measures to ensure

that the self-reliant operation of the Project will be sustained during and after the period of Japanese technical cooperation, through the full and active involvement in the Project of all related authorities, beneficiary groups and institutions.

2. The Government of the Republic of the Philippines will ensure that the technologies and knowledge acquired by the Philippine nationals as a result of the Japanese technical cooperation will contribute to economic and social development of the Republic of the Philippines.
3. The Government of the Republic of the Philippines will grant, in the Philippine, privileges, exemptions and benefits to the Japanese experts referred to in II-1 above and their families no less favorable than those accorded to experts of third countries conducting a similar mission in the Republic of the Philippines.
4. The Government of the Republic of the Philippines will ensure that the Equipment referred to in II-2 above will be utilized effectively for the implementation of the Project in consultation with the Japanese experts referred to in Annex II.
5. The Government of the Republic of the Philippines will take necessary measures to ensure that the knowledge and experience acquired by the Philippine personnel from technical training to be organized in Japan will be utilized effectively in the implementation of the Project.
6. In accordance with the laws and regulations in force in the Republic of the Philippines, the Government of the Republic of the Philippines will take necessary measures to provide, at its own expense, for the project:
  - (1) Services of the Philippine counterpart personnel and administrative personnel as listed in Annex IV;
  - (2) Land, buildings and facilities as listed in Annex V;
  - (3) Supply or replacement of machinery, equipment, instruments, vehicles, tools, spare parts and any other materials necessary for the implementation of the Project other than the Equipment provided through JICA under II-2 above;
  - (4) Means of transport and travel allowances for the Japanese experts for official travel within the Republic of the Philippines;
  - (5) Suitably furnished accommodations for the Japanese experts and their families.
7. In accordance with the laws and regulations in force in the Republic of the Philippines, the Government of the Republic of the Philippines will take necessary measures to meet:

- (1) Expenses necessary for the transportation within the Republic of the Philippines of the Equipment referred to in II-2 above as well as for the installation, operation and maintenance thereof;
- (2) Customs, duties, internal taxes and any other charges imposed in the Republic of the Philippines on the Equipment referred to in II-2 above;
- (3) Running expenses necessary for the implementation of the Project.

#### IV. ADMINISTRATION OF THE PROJECT

1. Undersecretary for Regional and Field Operations, Research and Training, Department of Agriculture (hereinafter referred to as "DA"), will bear overall responsibility for the implementation of the Project.
2. Regional Director, Region VII, DA, the Project Director, will bear responsibility for the administration and implementation of the Project.
3. Manager, Bohol Agricultural Promotion Center (hereinafter referred to as "APC"), as Project Manager, will be responsible for the managerial and technical matters of the Project.
4. The Japanese Team Leader (Chief Advisor) will provide necessary recommendations and advice to the Project Director and the Project Manager on any matters pertaining to the implementation of the Project.
5. The Japanese experts will provide necessary technical guidance and advice to the Philippine counterpart personnel on technical matters pertaining to the implementation of the Project.
6. For the effective and successful implementation of technical cooperation for the Project, Committees will be established whose functions and composition are described in Annex VI.

#### V. JOINT EVALUATION

Evaluation of the Project will be conducted jointly by the two Governments through JICA and the Philippine authorities concerned, at the middle and during the last six months of the cooperation term in order to examine the level of achievement.

#### VI. CLAIMS AGAINST JAPANESE EXPERTS

The Government of the Republic of the Philippines undertakes to bear claims, if any arise, against the Japanese experts engaged in technical cooperation for the Project resulting from, occurring in the course of, or otherwise connected with the discharge of their official functions in the Philippines except for those arising from the willful misconduct or gross negligence of the Japanese experts.

#### VII. MUTUAL CONSULTATION

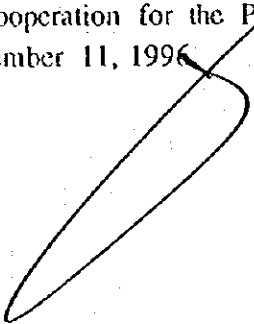
There will be mutual consultation between the two Governments on any major issues arising from, or in connection with this Attached Document.

#### VIII. MEASURES TO PROMOTE UNDERSTANDING AND SUPPORT FOR THE PROJECT

For the purpose of promoting the support of the people of the Philippines to the Project, the Government of the Republic of the Philippines will take appropriate measures to make the Project widely known to the people of the Philippines.

#### IX. TERM OF COOPERATION

The duration of the technical cooperation for the Project under this Attached Document will be five (5) years from November 11, 1996.



## ANNEX I MASTER PLAN

### 1. Overall Goal

Agricultural production and income of farmers in Bohol are increased.

### 2. Objective of the Project

Agricultural productivity is increased by improving management of farming activities in the Project sub-site.

### 3. The expected output of the Project

- (1) Baseline survey and monitoring can be conducted by APC staff
- (2) Improved location specific technologies for a Rice-based Farming System are adopted in the Project sub-site
- (3) Effective management of farming activities are carried out in the Project sub-site
- (4) Technical capabilities of extension workers and key farmers in Bohol are enhanced
- (5) Agricultural promotion system is improved by enhanced collaborative linkages of APC with Local Government Unit ( hereinafter referred to as "LGU" ) and concerned organizations

### 4. Activities of the Project

- (1) Formulation of detailed work plan based on the baseline survey and conduct of the monitoring of Project achievement.
  - 1) To conduct a baseline survey
  - 2) To prepare the Project activity plan and prioritize research subjects
  - 3) To conduct monitoring of the Project
- (2) Improvement and dissemination of location specific technologies for a Rice-based Farming System in the Project sub-site.
  - 1) To improve cultivation technology
  - 2) To improve cropping systems
  - 3) To develop appropriate water management technology
  - 4) To improve the operation and maintenance system of irrigation facilities
  - 5) To test farm machinery and identify appropriate postharvest facilities
  - 6) To improve farm machinery utilization and management
  - 7) To improve farm management efficiency
  - 8) To enhance extension activity in order to disseminate appropriate technology
- (3) Improvement of management capability of farmers in the Project sub-site
  - 1) To enhance farmers' organizations (Irrigators' Association, etc.) in the Project sub-site towards self-reliance
  - 2) To provide practical management skills
- (4) Enhancement of training
  - 1) To train agricultural extension workers of LGU
  - 2) To train key farmers in Bohol
- (5) Enhancement of collaborative linkage of APC with LGU and concerned organizations in carrying out the Project activities of (1) to (4) above.
  - 1) To clarify the roles of LGU and the concerned organizations
  - 2) To enhance collaborative linkage of APC with LGU and the concerned organizations



5. Japanese Technical Cooperation

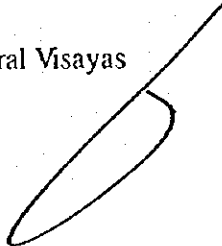
The Government of Japan will assist the Government of the Republic of the Philippines in carrying out the activities of the Project.

6. Project Site

Bohol Agricultural Promotion Center, Tagbilaran, Bohol Province, Central Visayas

7. Project Sub-site

Capayas, Bohol Province, Central Visayas

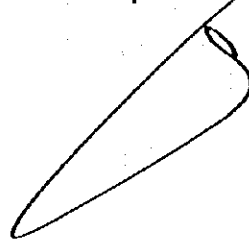


## ANNEX II LIST OF JAPANESE EXPERTS

Long-term experts will be dispatched as follows:

1. Team Leader
2. Coordinator
3. Agronomy
4. Water Management
5. Farm Mechanization
6. Farm Management

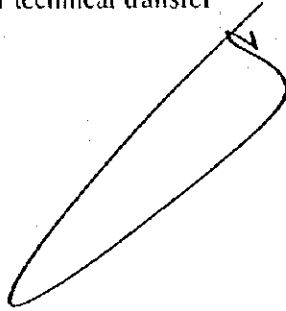
Note : Short-term expert(s) will be dispatched when necessity arises for the smooth implementation of the Project.



### ANNEX III LIST OF MACHINERY AND EQUIPMENT

Machinery and equipment necessary for the activities described above in II-2 of the Attached Document for technical transfer will be provided by Japan. These are to include:

1. Agricultural machinery, equipment and spare parts
2. Vehicles necessary for technical cooperation activities
3. Teaching and communication materials including audio-visual equipment
4. Technical instruments and equipment
5. Other equipment necessary for technical transfer

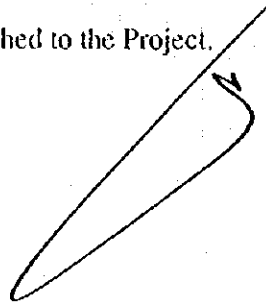


Handwritten signature or initials, possibly 'J. G.', located in the bottom right corner of the page.

ANNEX IV LIST OF PHILIPPINE COUNTERPARTS AND OTHER PERSONNEL.

1. Project Manager: Manager, APC
2. Deputy Project Manager: Deputy Manager, APC
3. Counterpart (C/P) personnel for each field of long-term and short-term experts  
(At least two full-time C/Ps for each long-term expert)
4. Administrative Personnel
  - (1) Administration and accounting
  - (2) Secretary
5. Other necessary supporting staff(s)

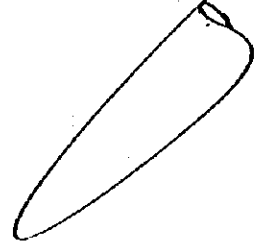
Note : At least two C/P from NIA will be dispatched to the Project.



A handwritten signature or initials in black ink, located at the bottom left of the page.

## ANNEX V LIST OF LAND, BUILDINGS AND FACILITIES

1. Buildings, facilities and office space for the Project
2. Space for the machinery and equipment provided
3. Electricity and communication facilities
4. Other land, buildings and facilities necessary for the implementation of the Project



Handwritten signature or initials, possibly 'M. G.', located at the bottom right of the page.

## ANNEX VI THE COMMITTEE

### 1. The Advisory Committee

#### (1) Functions

The Advisory Committee will meet whenever the need arises, and functions:

- 1) To provide policy directions and guidance for the activities of the Project.
- 2) To evaluate the overall progress and achievement of the Project.

#### (2) Composition

The Advisory Committee is composed of:

##### 1) Chairperson:

Undersecretary for Regional and Field Operations, Research and Training, DA

##### 2) Co-Chairperson:

Resident Representative, JICA Philippines Office

##### 3) Members:

- a) Representative from DA-PMS(Planning and Monitoring Service) Project Packaging Group
- b) National Economic Development Authority (NEDA) Project Monitoring Staff
- c) Representative from National Irrigation Administration (NIA) Central Office
- d) Representative from Embassy of Japan
- e) Regional Director, DA, Region VII
- f) Governor, Bohol Province
- g) Project Manager, APC
- h) Japanese Team Leader
- i) Assigned personnel by JICA Philippines office, if necessary

### 2. The Joint Committee

#### (1) Functions

The Joint Committee will meet at least once a year and whenever the need arises, and functions:

- 1) To provide directions and guidance for the activities carried out by the Project and to coordinate interrelated activities within the DA and other related organizations;
- 2) To review and approve the Annual Work Plan of the Project to be formulated under the framework of the Record of Discussions;
- 3) To review the overall progress of the technical cooperation program and the level of achievement of the Annual Work Plan;
- 4) To review and exchange views on major issues arising from or in connection with the Project.

#### (2) Composition

The Joint Committee will be composed of:

- 1) Chairperson:  
Regional Director, DA, Region VII
- 2) Co-Chairperson:  
Japanese Team Leader
- 3) Philippine Side:
  - a) Representative from DA-PMS
  - b) Provincial Agricultural Officer, LGU
  - c) Superintendent, Central Visayas Integrated Agricultural Research Center (CENVIARC)
  - d) Project Manager, APC
  - e) Representative from NEDA Region VII
  - f) NIA Provincial Manager
  - g) Provincial Planning and Development Officer
  - h) Sangguniang Panlalawigan for Agriculture (Provincial Board Member for Agriculture)
  - i) Mayor, Municipality of Ubay
- 4) Japanese Side:
  - a) Japanese Experts
  - b) Representative from JICA Philippines Office
  - c) Personnel concerned to be dispatched by JICA, if necessary.

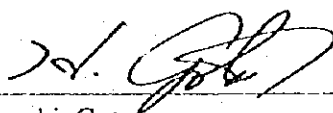
Note: Person(s) admitted by Chairperson and Co-Chairperson may attend the meeting.  
Official(s) of the Embassy of Japan may attend the Joint Committee as observer(s).

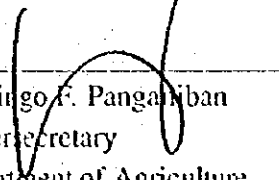
**TENTATIVE SCHEDULE OF IMPLEMENTATION  
OF THE JAPANESE TECHNICAL COOPERATION  
FOR  
THE BOHOL INTEGRATED AGRICULTURE PROMOTION PROJECT  
IN THE REPUBLIC OF THE PHILIPPINES**

The Japan International Cooperation Agency (hereinafter referred to as "JICA"), with regard to the recommendation of the Minutes of Understanding of the Long-Term Study on May 29, 1996 and August 9, 1996, had a series of discussions through the Resident Representative of JICA in the Philippines with the authorities concerned of the Government of the Republic of the Philippines concerning the Tentative Schedule of Implementation for the Bohol Integrated Agriculture Promotion Project (hereinafter referred to as "the Project") as annexed hereto.

This has been formulated in connection with the Attached Document of the Record of Discussions signed between the Resident Representative of JICA in the Philippines and the authorities concerned in the Republic of the Philippines for the Project on condition that the necessary budget will be allocated for the implementation of the Project by both Governments, and that the schedule is subject to change within the framework of the Record of Discussions when necessity arises in the course of implementation of the Project.

Manila, October 16, 1996

  
\_\_\_\_\_  
Hiroshi Goto  
Resident Representative  
Japan International Cooperation Agency  
Philippines Office

  
\_\_\_\_\_  
Domingo F. Pangaliban  
Undersecretary  
Department of Agriculture  
The Republic of the Philippines

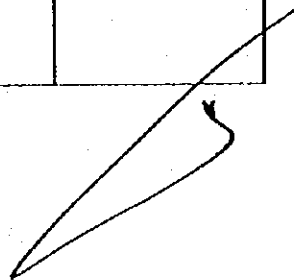
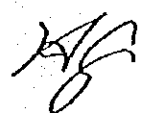


1. Activities of the Project

Item / Activities	Schedule (Year)					Remarks
	1st	2nd	3rd	4th	5th	
<p>(1) Formulation of detailed work plan based on the baseline survey and conduct of the monitoring of Project achievement.</p> <p>1) To conduct a baseline survey</p> <p>2) To prepare the Project activity plan and prioritize research subjects</p> <p>3) To conduct monitoring of the Project</p>						(1) Survey and monitoring will be conducted in Capayas and related area.
<p>(2) Improvement and dissemination of location specific technologies for a Rice-based Farming System in the Project sub-site.</p> <p>1) To improve cultivation technology</p> <p>2) To improve cropping systems</p> <p>3) To develop appropriate water management technology</p> <p>4) To improve the operation and maintenance system of irrigation facilities</p> <p>5) To test farm machinery and identify appropriate postharvest facilities</p> <p>6) To improve farm machinery utilization and management</p> <p>7) To improve farm management efficiency</p> <p>8) To enhance extension activity in order to disseminate appropriate technology</p>						

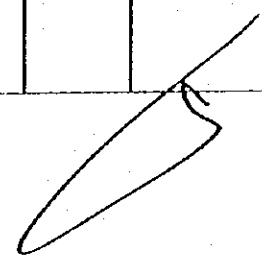
A large handwritten signature is written over the bottom right corner of the table. Below it, the initials 'BPC' are written in a stylized, cursive font.

Item / Activities	Schedule (Year)					Remarks
	1st	2nd	3rd	4th	5th	
<p>(3) Improvement of management capability of farmers in the Project sub-site.</p> <p>1) To enhance farmers' organizations (Irrigators' Association, etc.) in the Project sub-site towards self-reliance</p> <p>2) To provide practical management skills</p>						
<p>(4) Enhancement of training.</p> <p>1) To train agricultural extension workers of LGU</p> <p>2) To train key farmers in Bohol</p>						
<p>(5) Enhancement of collaborative linkage of APC with LGU and concerned organizations in carrying out the Project activities of (1) to (4) above</p> <p>1) To clarify the roles of LGU and the concerned organizations</p> <p>2) To enhance collaborative linkage of APC with LGU and the concerned organizations</p>						

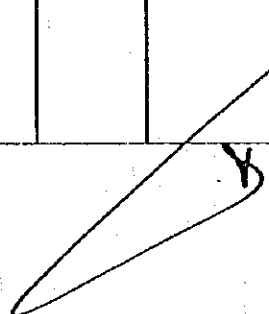
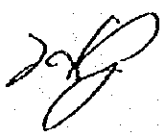
2. Technical Cooperation Program (Japanese Side)

Item / Activities	Schedule (Year)					Remarks
	1st	2nd	3rd	4th	5th	
1. Long-term experts: 1) Team Leader 2) Coordinator 3) Agronomy 4) Water Management 5) Farm Mechanization 6) Farm Management						
2. Short-term experts (when necessity arises)						
3. Equipment and Machinery 1) Agricultural machinery, equipment and spare parts 2) Vehicles necessary for technical cooperation activities 3) Teaching and communication materials including audio-visual equipment 4) Technical instruments and equipment 5) Other equipment necessary for Technical transfer						
4. Acceptance of Philippine Personnel related to the Project for Training in Japan						




3. Technical Cooperation Program (Philippine side)

Item / Activities	Schedule (Year)					Remarks
	1st	2nd	3rd	4th	5th	
<p>1. Counterparts</p> <p>1) Project Manager</p> <p>2) Deputy Project Manager</p> <p>3) Counterpart personnel for each field of long-term and short-term experts (At least two full time C/Ps for each long-term expert)</p> <p>4) Administrative personnel</p> <p>5) Other necessary supporting staff</p>						At least two C/P from NIA will be dispatched to the Project
<p>2. Land, Buildings, Facilities</p> <p>1) Building, facilities and office space for the Project</p> <p>2) Space for the machinery and equipment provided</p> <p>3) Electricity and communication facilities</p> <p>4) Other land, buildings and facilities necessary for the implementation of the Project</p>						
<p>3. Running Expenses</p> <p>All running Expenses for the Project such as salaries, maintenance costs, spare parts, transportation, housing, fuel, electricity, etc.</p>						
<p>4. Other</p> <p>Establishment and management of the Advisory and Joint Committee</p>						



PROJECT DESIGN MATRIX (PDM)

NARRATIVE SUMMARY	OBJECTIVELY VERIFIABLE INDICATORS (OVI)*	MEANS OF VERIFICATION*	IMPORTANT ASSUMPTIONS*
<p><b>OVERALL GOAL</b> Agricultural production and income of farmers in Bohol are increased.</p>	<ul style="list-style-type: none"> <li>Social indicators</li> </ul>	<ul style="list-style-type: none"> <li>Survey and other means</li> </ul>	<ol style="list-style-type: none"> <li>Bohol remains as Central Visayas' primary agriculture area.</li> <li>National policy on provision of physical facility for agriculture sector stays.</li> <li>DA retains physical location of APC.</li> </ol>
<p><b>PROJECT PURPOSE</b> Agricultural productivity is increased by improving management of farming activities in the project Sub-site.</p>	<ul style="list-style-type: none"> <li>Increase in product value</li> <li>Yield increase</li> <li>Decrease in postharvest losses</li> <li>Increase in farmers' income</li> <li>Increase in food security</li> </ul>	<ul style="list-style-type: none"> <li>Survey and other means</li> </ul>	<ol style="list-style-type: none"> <li>APC remains as ROS for lowland irrigated development zone for Central Visayas.</li> <li>Budget is available to implement the project.</li> <li>APC staff is increased particularly for farm mechanization and water management.</li> </ol>
<p><b>OUTPUTS</b> (1) Baseline survey and monitoring can be conducted by APC staff. (2) Improved location specific technologies for a Rice-based Farming System are adopted in the Project sub-site. (3) Effective management of farming activities carried out in the project sub-site. (4) Technical capabilities of extension workers and key farmers in Bohol are enhanced. (5) Agricultural promotion system is improved by enhanced collaborative linkages of APC with local Government Unit (hereinafter referred to as "LGU") and concerned organizations</p>	<ul style="list-style-type: none"> <li>Number of participating farmers using established technology</li> <li>Production &amp; productivity increase</li> <li>Decrease in postharvest losses</li> <li>Increase in farmers' income</li> <li>Number of training participants</li> <li>Efficient collection of irrigation service fees</li> </ul>	<ul style="list-style-type: none"> <li>Survey and other means</li> </ul>	<ol style="list-style-type: none"> <li>APC remains the Center for Research for lowland irrigated development zone.</li> <li>APC becomes the Hands-on Center for Farm Mechanization and Water Management in Bohol in coordination with ATI, DSWM, NIA and NAPHIRE.</li> <li>NIA continues to efficiently operate the sub site Irrigation System.</li> </ol>
<p><b>ACTIVITIES</b> (1) Formulation of detailed work plan based on the baseline survey and conduct of the monitoring of Project achievement. 1) To conduct a baseline survey 2) To prepare the Project activity plan and prioritize research subjects 3) To conduct monitoring of the Project (2) Improvement and dissemination of location specific technologies for a Rice-based Farming System in the Project sub-site. Project-sub site 1) To improve cultivation technology 2) To improve cropping systems 3) To develop appropriate water management technology 4) To improve the operation and maintenance system of irrigation facilities 5) To test farm machinery and identify appropriate postharvest facilities 6) To improve farm machinery utilization and management 7) To improve farm management efficiency 8) To enhance extension activity in order to disseminate appropriate technology (3) Improvement of management capability of farmers in the Project Sub-site 1) To enhance farmers' organizations (Irrigators' Association, etc.) in the Project sub-site towards self-reliance 2) To provide practical management skills (4) Enhancement of training 1) To train agricultural extension workers of LGU 2) To train key farmers in Bohol (5) Enhancement of collaborative linkage of APC with LGU and concerned organizations in carrying out the Project activities of (1) to (4) above. 1) To clarify the roles of LGU and the concerned organizations 2) To enhance collaborative linkage of APC with LGU and the concerned organizations</p>	<p><b>INPUTS</b></p> <p>(Japanese side)</p> <ol style="list-style-type: none"> <li>Long-term Experts             <ol style="list-style-type: none"> <li>Team Leader</li> <li>Coordinator</li> <li>Agronomy</li> <li>Water Management</li> <li>Farm Mechanization</li> <li>Farm Management</li> </ol> </li> <li>Short-term Experts (when necessity arises)</li> <li>Equipment and Machinery             <ol style="list-style-type: none"> <li>Agricultural machinery, equipment and spare parts</li> <li>Vehicles necessary for TCP activities</li> <li>Teaching materials &amp; communication equipment including audio-visual equipment</li> <li>Technical instruments &amp; equipment</li> <li>Other equipment necessary for TCP activities</li> </ol> </li> <li>Counterpart training Training of Philippine Personnel in Japan</li> <li>Fund Support for Training Program</li> </ol> <p>(Philippine side)</p> <ol style="list-style-type: none"> <li>Counterpart Personnel             <ol style="list-style-type: none"> <li>Project Manager</li> <li>Deputy Project Manager</li> <li>Counterpart Personnel for the Expert (at least 2 each)</li> <li>Administrative and Other Staff to support the Project activities</li> </ol> </li> <li>Physical Facilities             <ol style="list-style-type: none"> <li>Buildings, facilities, office space for the Project</li> <li>Space for machinery and equipment</li> <li>Electricity, water and communication facilities</li> <li>Other land, buildings and facilities necessary for the Project</li> </ol> </li> <li>Running Expenses All running expenses necessary for the implementation of the Project.</li> <li>Others Establishment &amp; management of Committees necessary for Project implementation</li> </ol>	<ol style="list-style-type: none"> <li>There is no social obstruction (land ownership, etc.) to farmer's participation to the project.</li> <li>LGU and NIA actively participate and support the project.</li> <li>Linkage with other NGOs, GOs, LGUs, and POs is maintained.</li> </ol> <p><b>PRE-CONDITIONS</b></p> <ol style="list-style-type: none"> <li>Farmers in the CIP are cooperative in the Project activities.</li> <li>Counterpart personnel is assigned for each Japanese Expert.</li> <li>GOP counterpart fund is available.</li> <li>APC maintains its mandate as ROS for lowland irrigated development zone.</li> </ol>	

\* INDICATORS, MEANS OF VERIFICATION, and ASSUMPTIONS are to be discussed upon commonment of the Project.









## 資料5 第1次長期調査主要協議経緯要旨

5月13日(月)

大使館表敬

面談者：山内勝彦一等書記官

・農業省次官の交代について

調査団：本調査団の対処方針を説明

農業省次官がManuel M. Lantin氏からDomingo F. Panganiban氏と交代したことについて、農業政策や方針に何か影響があるか。

書記官：昨年のRice crisisの一件で人心を一新しており、今回の次官の交代もその延長である。基本的には、政策や方針はこれまでと変わらないと考えて良い。

・第2KRの見返り資金について

調査団：ボホールの第2フェーズプロジェクトに第2KRの見返り資金の割り当てが可能か。

書記官：可能ではある。フィリピン側は、NAFSIが窓口である。

・コミッティーについて

調査団：アドバイザーコミッティーへ大使館から参加が可能か。

書記官：当方としては、オブザーバーとしての立場と理解しているが、コミッティーメンバーとして参加する必要があるのであれば、人を出すことは可能である。

## JICA事務所訪問

主要面談者：橋本明彦所長

・農業省次官の交代について

所長：まだ、次官との面会の機会は得ていないが、技術協力には大きな影響はない。

・ボホールの貧困の軽減について

所長：地主・小作関係等土地所有制度について明らかにしてほしい。ODAで結果的に地主が儲かっても意味がないのではないか。

調査団：今回の調査では、水利組合を中心に調査をする予定であるが、地主・小作関係も考慮に入れて調査を行う。

・フィリピンにおける他の農業プロジェクトとの連携

調査団：APCは、従来より稲の共同研究や研修等の分野で連携協力関係にあるが、今回のプロジェクトでは、農業機械の分野でもPhilRiceとの連携を考えている。また、他の専門分野でも畑地灌漑フェーズⅡや土壌研究プロジェクト等の研究プロジェクトと連携し、CPの研修の受け入れ等を検討していきたい。

5月14日(火)

NIA (国家灌漑庁)

面談者: Jorge B. Obordo (Assistant Administrator)

・今回のプロジェクトにおけるNIAからのC/Pの派遣について

オボルド: 現在、DAの下にNIAが属しており、C/Pの派遣については問題はない。

・カバヤス・ダムの嵩あげについて

オボルド: カバヤス・ダムの嵩あげは承認されており、いつでも工事にとりかかれる。嵩あげの目的は、スピルオーバー分を無駄にせず貯水するため。工事は、作付けに影響にしないように行う。

・水管理組合 (Irrigation Association) の現状について

オボルド: 水管理組合がうまくいっていないのは、リーダーに責任があるからである。NIAには、Institutional Development Officerがおり、彼らがIAのトレーニングを行っている。圃場整備や実施の際の換地は、地主と話合っている。

DA (農業省)

主要面談者: Gumersido D. Lasam (Assistant Secretary)

・GAP (Gintong Ani "Golden Harvest" Program) について

ラサム: 前農業省大臣のもとで計画・実施されてきたGP EP (Grains Production Enhancement Program) は、GAPに引き継がれている。

・地方分権による農業普及活動の変化について

ラサム: 農業普及部門の地方移管により、普及員は、地方政府に属するようになり、原則的には地方政府の予算のもとで活動をしている。なお、GAPには、国家予算が割り当てられるが、実施については、地方政府との連携を重視している。

・APCとATIのデマケーションについて

ラサム: ATIは研修機関であり、National Programの下で研修活動を行っている。一方、APCは、地域特有の技術を研究開発し、研修、普及を行っており、両者のデマケーションはできている。

5月15日(水)

DA Region VII

面談者: Bienvenido Almirante (Director)

・APCの位置づけについて

アルミランテ: ボホールは、Region VIIにおける米の供給地であることから、APCの活動は、食糧保障の観点から非常に重要である。

・米生産について

調査団：今後どのようにして米の増産を行うのか

アルミランテ：現在の関心は、Region VIIの灌漑面積を増やし、水の効率利用と農業技術の開発及び普及を通じて乾期における米の増産をすすめることである。ネグロスでは、砂糖生産から米生産に移行しており、Region VIIにおいて米増産は重要課題である。

調査団：ポストハーベストの施設は整っているのか

アルミランテ：Region VIIでは、ボホールが最もポストハーベスト施設が整っており、米の増産計画とともに、施設を強化する必要がある。

・C/Pの出向について

アルミランテ：APCにNIAの人材を出向させることには、全く問題がない。人数を増やす必要があれば、プロポーザルを提出してもらえば対応する。

また、LGU (Local Government Unit) からも4名をC/Pとして協力させる予定である。

・GAPについて

アルミランテ：GAPは、主食である米とホワイトコーン、換金作物、畜産、養魚の4つがコンポーネントになっている。このプログラムは既に始まっており、成功させるためには、LGUと共同で実施しなければいけない。また、農民がこのプログラムを受け入れて実施に移すためには、インセンティブが必要であり、その一つとしてLand Bankが農民に資金を融資する計画になっている。

## NEDA Region VII

主要面談者：Romeo C. Escandor (Regional Director)

・今回の調査団の目的について

エスクデロ：今回のプロジェクトは、技術協力だけなのか、フェーズⅠのように機械、建物の供与はあるのか

調査団：技術協力が中心である。機械、建物は、APCが、基本的には用意することになっている。

・アフターケアプロジェクトからフェーズⅡに変わったことについて

エスクデロ：APCから連絡をうけており、既に了承済みであるため、マニラのヘッドオフィスに連絡する。また、フェーズⅡプロジェクトは、Region VIIのKey Programのひとつであるため、必要だと考えている。

## Bohol Province

面談者：Edgardo M Chatto (Vice Governor)

### ・C/Pについて

チャットー：APC以外は、NIAからのC/Pの他にUbayのATが協力者になる。

### ・フェーズⅡプロジェクトについて

チャットー：ボホールの発展のためには、農業、特に灌漑の役割が重要なため、本プロジェクトに期待している。

### ・ボホールの長期的な計画について

チャットー：Cebuの水資源が限界にきているため、今後、ボホール内のダム建設によって余った水をマリパイプを使ってCebuに送る計画がある。

調査団：農業について包括的な計画はないのか。

チャットー：ボホールの農業分野における包括的な長期計画がないため、JICAによってマスタープランを完成してほしい。

## 5月16日（木）

### APCでの協議

主要出席者：Ricardo D. Oblena (APC Manager)

Calixto Seroje (NIA Manager)

### ・カバヤス・ダムの嵩あげについて

セロヘ：現在の貯水量では、灌漑を予定している地域に水が行き届かないため、嵩あげを行う。計画では、2.5mの嵩あげにより、現在の貯水量1.6百万トンに1.8百万トンを加え総貯水量は、3.4百万トンとする予定。工事は、6月着工で12月完成の予定であり、作付けに影響はない。

また、設計にあたっては、最初にカバヤス・ダムを設計した日本のコンサルタント会社に相談した。

### ・マリナオ・ダムについて

セロヘ：マリナオ・ダムは、今年の2月に幹線、支線を含めて完成している。

### ・圃場整備について

セロヘ：地主との交渉が必要なため、交渉が成立した土地から交換分圃場整備を行っている。

農地改革は、政策に問題があり、農家にあまり受け入れられておらず、地主・小作関係は、いまだに根強く残っている。

### ・APCの内部組織について

オブリナ：今回のプロジェクトを実施する際に水管理や農業機械を導入するため、現在、

改組を計画している。

その他、17日以降の合同現地調査による日程や内容の打ち合わせを行った。

5月17日(金)

Ubay Municipal

面談者：Eutiquio Bernales (Mayor)

・フェーズⅡプロジェクトについて

ベルナレス：ウバイ米という特産米を将来的には生産し、国家的食糧保障に寄与するために日本の技術協力に大きな期待をしている。また、普及員を Temporary Employeeとして地方予算で雇用し、参加させ、Municipalとしては、プロジェクトに100%協力する。

・水管理について

調査団：LGUは、灌漑施設や水管理組織についてNIAとどのような責任分担になっているのか

ベルナレス：LGUには、施設の管理責任はなく、全てNIAが行っている。しかし、問題が多く、水路の整備や水管理組織が不十分で有効に機能していない。また、水管理費の徴収もNIAが行っており、LGUは関与していないが、今後は、NIA、LGUとの良好な関係と連携が必要だと認識している。

・その他

ベルナレス：労力、畜力の不足に対応するため、LGUの補助と農民の自助努力により、農業機械の導入を促進したい。

ベルナレス：将来的には、農業大学をウバイに設立する予定。既に大学設立の申請を終え、登録はされているが、許可がいつおりるかはわからない。

ベルナレス：現在、4名の普及員を擁しているが、プロジェクトに必要な増員を積極的に進める準備がある。

Capayas NIA Office

面談者：Camila Descallar (Institutional Development Officer)

・カパヤス地区の圃場整備や灌漑施設の進捗状況について

デスカラル：灌漑水供給面積は、450haに達している。圃場整備は、農家補助の関係で支払い能力のあるところ限定されるためバラバラに進んでおり、平均すると1日あたり0.5ha程度行われている。

・水管理について

デスカラル：水門の開閉については、農家がNIAの規則を守らず、勝手に操作するため

トラブルがある。違法行為のため罰則はあるが、取り締まることは、困難である。水管理費は、水管理組合に徴収を任せているが順調にっていない。また、水を巡っての農民同士の争いもある。しかし、これらは、灌漑圃場に対して水の絶対量が足りないためであり、嵩あげによって効率よく水の配分がされれば問題は解決する。

Pilar NIA Office

面談者：Abello Losaria (Division Engineer)

・圃場整備の進捗状況について

ロザリア：幹線だけでなく、支線の水路の工事は終わっている。

圃場整備は、これまで約60haが機械により終わっているが、地主の問題等で進捗状況は思わしくない。しかし、支線B地域では、農家が自力で水牛を使って圃場整備を進めており、合計約100haが完了している。計画にある圃場整備は、今後ミンダナオにある重機を約10台導入し、2年間で終わらせる予定である。

(その他)

・OECP黒石駐在員事務所長との電話による会話の主な内容

時田：ピラール地区(マリナオ・ダム)でプロ枝を始めることについて

黒石：OECPとして支障はない。

時田：会計検査における指摘事項は何か。

黒石：工事が遅れたことに対する指摘である。

時田：州Irrigation Officerは、BHIP第2フェーズの灌漑開発についても日本からの融資を考えているようだが。

黒石：今回、2年間の返済延長を決めた。したがって、2年間にBHIPの第1フェーズの圃場整備が完了しないかぎり、第2フェーズの融資は考えられない。現在のところ、既に遅れが見られ、NIAの対応は十分とは言い難い。

時田：竣工式で比政府の発言はどのような内容であったか。

黒石：工事関係では、特に発言はなかった。

資料6 ボホール州農業関連資料

(1) ボホール州の町村別 (Municipality) 農業情報

Agricultural Situation in Bohol Province

Municipalities	Population	Total Area	(ha) Rain-fed	(ha) Irrigated	Coconut	(%) Corns	Root C	Veg. & Leg.	No. of Farmers	House- hold
1. Albuquerque	6,221		85	375		42		17	11	1442
2. Alicia	1,253		225	—		24		24	15	3405
3. Anda	13,497	6,256.1	131	50		666	551	8	16	2513
4. Araqueza	12,348		675	96		710		9	21	2526
5. Beclayon	11,952		180	—		163		35	17	2375
6. Balibisan	14,850	9,091.0	1,408	264	3,000	1,212	232	70	31	2591
7. Baruan	11,458	7,968	1,152	619		1,135	312	55	15	1919
8. Bien Unido	19,047		1,250	—		—		22	15	3370
9. Bilar	14,926	12,798.7	173	899	199,049	220	81	6	19	2551
10. Buenavista	21,665	11,618	550	56		40	755	8	35	3700
11. Calape	24,605	8,250.2	1,082	—		117	57	26	33	4813
12. Candijay	24,102		800	2,654		240		24	21	4680
13. Carmo	34,573		1,240	1,000		430		17.5	29	6,134
14. Carigbian	17,362		1,436	85		564		51.5	22	3,364
15. Clarin	16,021		220	219		153		4	24	
16. Corella	6,150		151	—		110		9	8	1,193
17. Cortes	10,527		305	—		267		5.75	14	2,072
18. Dagohoy	13,121	11,724.4	1,160	160	3,000	430	1,900	12	15	2,443
19. Danao	12,671		100	250		600		2.8	17	2,177
20. Dauis	23,401		—	—		—		4	12	4,103
21. Dimiao	11,697		169	383		216		15.05	35	2,416
22. Duero	14,242	9,856	30	552		325	800	475	21	2,772
23. Garcia Hernandez	18,956		160	400		53		14.5	30	3,391
24. Geclafe	21,135		150	—		95		6.5	24	3,825
25. Guindulman	26,225		2,797	526		860		8	19	5,028
26. Inabanga	37,460	12,814	130	100		155	51.5	17	60	4,732
27. Jagna	26,163	15,469.5	150	460		82	392	67.5	33	4,950
28. Lila	8,556	3,269.5	17	60		21	80	1.0	18	1,589
29. Loay	12,677		140	—		60		8	24	2,240
30. Loboc	13,716		250	25		154		11.5	28	2,604
31. Looa	34,400		360	—		1,450		8	67	2,074
32. Mabini	21,854		680	98		50		4.1	22	4,274
33. Maribojoc	15,214		59	132		128		43.84		
34. Panglao	17,004		—	—		350		5	10	3,056
35. Pilar	19,970		307	1,935		121		19.5	21	3,653
36. Pres. C.P. Garcia	21,173		260	—		25		7	23	3,198
37. Sagbayan	15,364	8,376.6	416	93	786	613	836	15.15	24	2,965
38. San Isidro	7,890	5,639.7	150	101		93	200	26	12	1,623
39. San Miguel	16,775		1,260	—		120		55.5	18	3,096
40. Sevilla	9,165		843	—		465		20	13	1,700
41. Sierra Bullones	21,101	9,939.4	465	1,270	1,280	160	335	6.5	22	3,732
42. Sikatuna	5,525	3,822.8	—	—	6,000	155	184	25	10	1,113
43. Talibon	41,873		1,282	295		130		12	25	2,676
44. Trinidad	19,945		3,562	160		180		27		
45. Tubigon	30,302		1,083	980		450		20.25	34	6,321
46. Ubay	48,902	27,216.6	2,260	1,220	5,225	342	500	14.75	44	8,786
47. Valencia	20,879	10,886.5	110	1,300		223	100	8	35	3,801
48. Tagbilaran	52,313		—	—		95		7	15	1,064
Total	948,403	411,726	29,123	16,581		5,371		13.05	1109	125,734

\* Data Source: National Statistics Office (NSO)  
 & Dept. of Agriculture (DA)



## (2) ボホール州のMunicipality別稲作付面積と生産農家数

MUNICIPALITY	CROP AREA (ha.)		NUMBER OF FARMERS	
	IRRIGATED	RAINFED	IRRIGATED	RAINFED
1. Alicia	375	225	750	450
2. Batuan	619	1152	1238	2304
3. Bilar	899	173	1798	346
4. Calape	-	1082	-	2164
5. Candijay	2654	800	5308	1600
6. Carmen	1000	1200	2000	2400
7. Clarin	219	220	438	440
8. Dagohoy	100	1100	200	2200
9. Dimiao	383	169	766	338
10. Duero	552	30	1104	60
11. Ga-Hernandez	400	100	800	200
12. Guindulman	526	2797	1052	3594
13. Inabanga	100	130	200	260
14. Jagna	400	150	800	300
15. Lila	60	17	120	34
16. Loboc	25	250	50	500
17. Mabini	98	680	196	1360
18. Pilar	1935	307	2870	614
19. Sagbayan	93	416	186	832
20. San Miguel	-	1260	-	2520
21. Trinidad	100	3562	200	7124
22. Talibon	295	1282	590	2564
23. Ubay	1220	2260	1040	4520
24. Anda	30	131	60	170
25. Loay	-	140	-	182
26. Sevilla	-	843	-	1094
27. Sr Bullones	1270	465	2450	604
28. Valencia	1300	110	2600	143
29. Bien Unido	-	1250	-	1623
30. Buenavista	50	550	100	714
31. Danao	280	100	560	130
32. Getafe	-	150	-	195
33. Pres. Garcia	-	200	-	260
34. San Isidro	101	180	202	234
35. Albur	-	85	-	110
36. Antequera	96	635	192	825
37. Baclayon	-	180	-	234
38. Balilihan	204	1408	408	1829
39. Catigbian	85	1436	170	1865
40. Corella	-	151	-	196
41. Cortes	-	305	-	396
42. Daus	-	-	-	-
43. Loon	-	300	-	390
44. Maribojoc	132	59	264	77
45. Panglao	-	-	-	-
46. Sikatuna	-	-	-	-
47. Tubigon	980	1083	1960	1406
48. Tagbilaran City	-	-	-	-
TOTAL	16,581	29,123	33,162	37,822

Source: APC, DA.

(3) 「穀物生産強化計画」州別目標面積

TARGET AREAS BY PROVINCE BY CROPPING SEASON (PRIORITY I)

REGION/PROVINCE	WET SEASON (MAY-JULY)	PALAGAD (OCT-DEC)	DRY SEASON (FEB-MAR)	TOTAL
CAR	20,440	10,500	4,116	35,056
1. ABRA	4,000	1,500	1,000	6,500
2. MT. PROVINCE	1,000	500	500	2,000
3. KALINGA	11,940	6,000	2,116	20,056
4. APAYAO	3,500	2,500	500	6,500
ILOCOS	54,239	21,350	7,212	82,801
1. ILOCOS NORTE	16,253	3,528	1,192	20,973
2. ILOCOS SUR	13,175	3,784	1,278	18,237
3. LA UNION	6,732	2,716	918	10,366
4. PANGASINAN	18,079	1,322	3,824	33,225
CAGAYAN VALLEY	115,267	70,000	22,880	208,247
1. CAGAYAN	29,327	1,393	6,038	33,758
2. ISABELA	66,966	4,977	13,452	121,395
3. NUEVA VIZCAYA	15,664	8,575	2,815	27,054
4. QUIRINO	3,310	2,055	675	6,040
CENTRAL LUZON	181,040	105,000	35,232	321,272
1. BATAAN	9,899	6,218	2,087	18,194
2. BULACAN	25,411	16,053	5,387	46,851
3. NUEVA ECIIJA	81,289	47,776	16,031	145,096
4. PAMPANGA	30,875	20,401	6,846	58,122
5. TARLAC	29,181	12,772	4,285	46,238
6. ZAMBALES	4,395	1,780	596	6,771
SOUTHERN TAGALOG	68,109	30,100	10,212	108,421
1. AURORA	5,652	2,920	991	9,563
2. CAVITE	8,052	1,100	374	9,526
3. LAGUNA	9,119	5,698	1,933	16,750
4. OCC. MINDORO	12,116	6,190	2,100	20,406
5. OR. MINDORO	14,934	6,579	2,232	23,745
6. PALAWAN	11,426	3,353	1,138	15,917
7. QUEZON	6,810	4,260	1,444	12,514

IRRIGATED AREAS

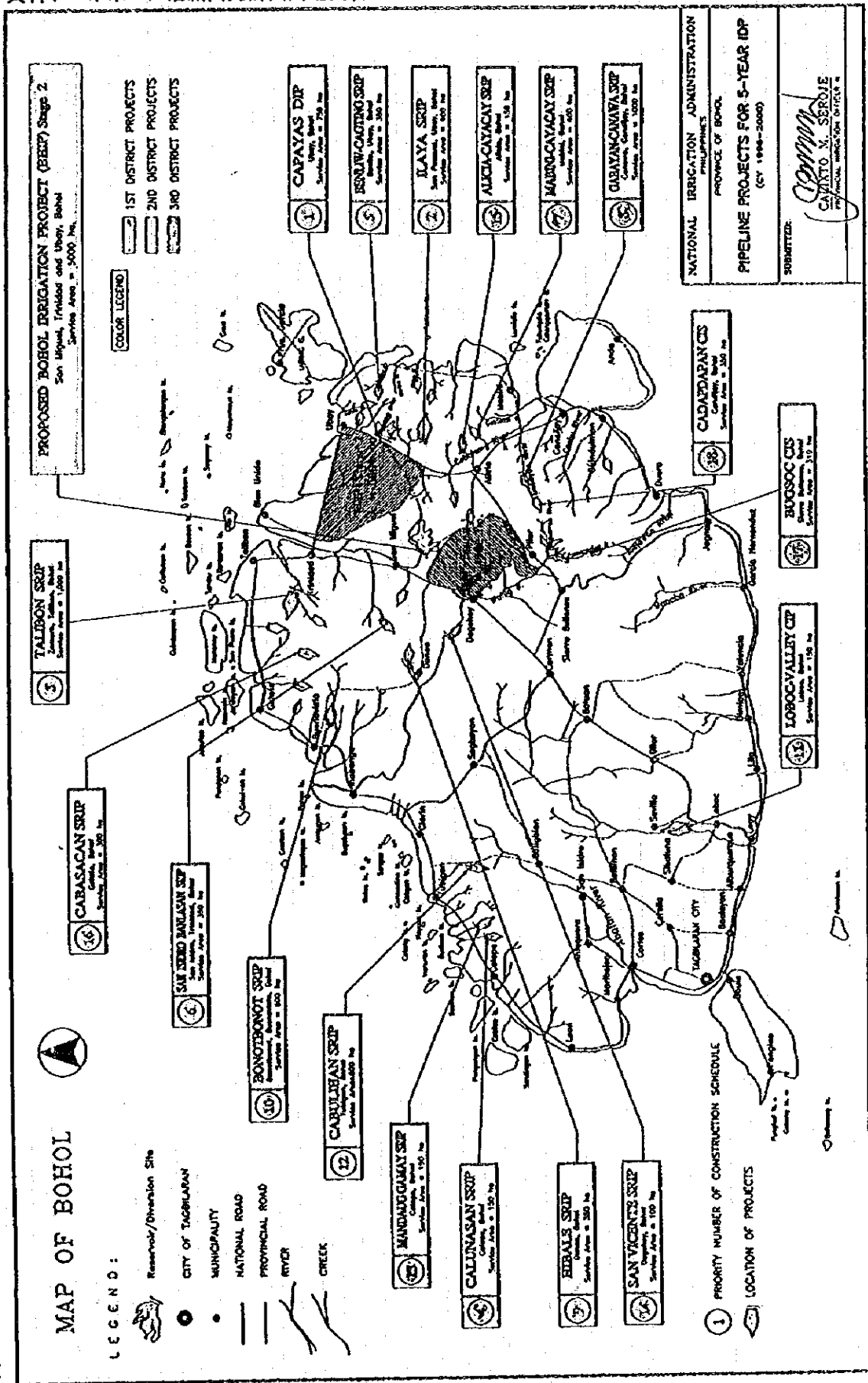
REGION/PROVINCE	WET SEASON (MAY-JULY)	PALAGAD (OCT-DEC)	DRY SEASON (FEB-MAR)	TOTAL
BICOL	42,267	18,200	6,768	67,235
1. ALBAY	13,786	5,935	2,473	22,194
2. CAM. NORTE	2,425	1,042	487	3,955
3. CAM. SUR	22,266	9,589	3,220	35,075
4. SORSOGON	3,789	1,634	588	6,011
WESTERN VISAYAS	36,281	17,850	5,940	60,071
1. AKLAN	3,928	2,343	780	7,051
2. ANTIQUE	5,332	2,498	832	8,662
3. CAPIZ	2,836	1,191	397	4,424
4. ILOILO	16,240	6,808	2,266	25,314
5. NEGROS OCC.	7,945	5,010	1,665	14,620
CENTRAL VISAYAS	12,629	6,300	2,196	21,125
1. BOHOL	9,036	4,652	1,622	15,310
2. NEGROS OR.	3,593	1,648	574	5,815
EASTERN VISAYAS	17,866	8,750	3,192	29,808
1. BILIRAN	3,246	1,696	567	5,689
2. E. SAMAR	470	232	63	765
3. LEYTE	11,309	5,601	2,117	19,027
4. N. SAMAR	322	159	35	516
5. S. LEYTE	1,883	936	365	3,184
6. W. SAMAR	256	126	45	427
WESTERN MINDANAO	27,594	7,350	2,496	37,440
1. ZAMBOANGA N.	5,225	1,127	383	6,735
2. ZAMBOANGA SUR	19,977	5,554	1,886	27,417
3. ZAMBOANGA CITY	2,392	669	227	3,288
NORTHERN MINDANAO	13,651	8,050	2,892	24,593
1. BUKIONON	9,898	5,386	2,087	17,831
2. MISAMIS OCC.	3,027	1,785	641	5,452
3. MISAMIS OR.	725	429	154	1,308

TARGET AREAS BY PROVINCE BY CROPPING SEASON (PRIORITY II)  
IRRIGATED AREAS

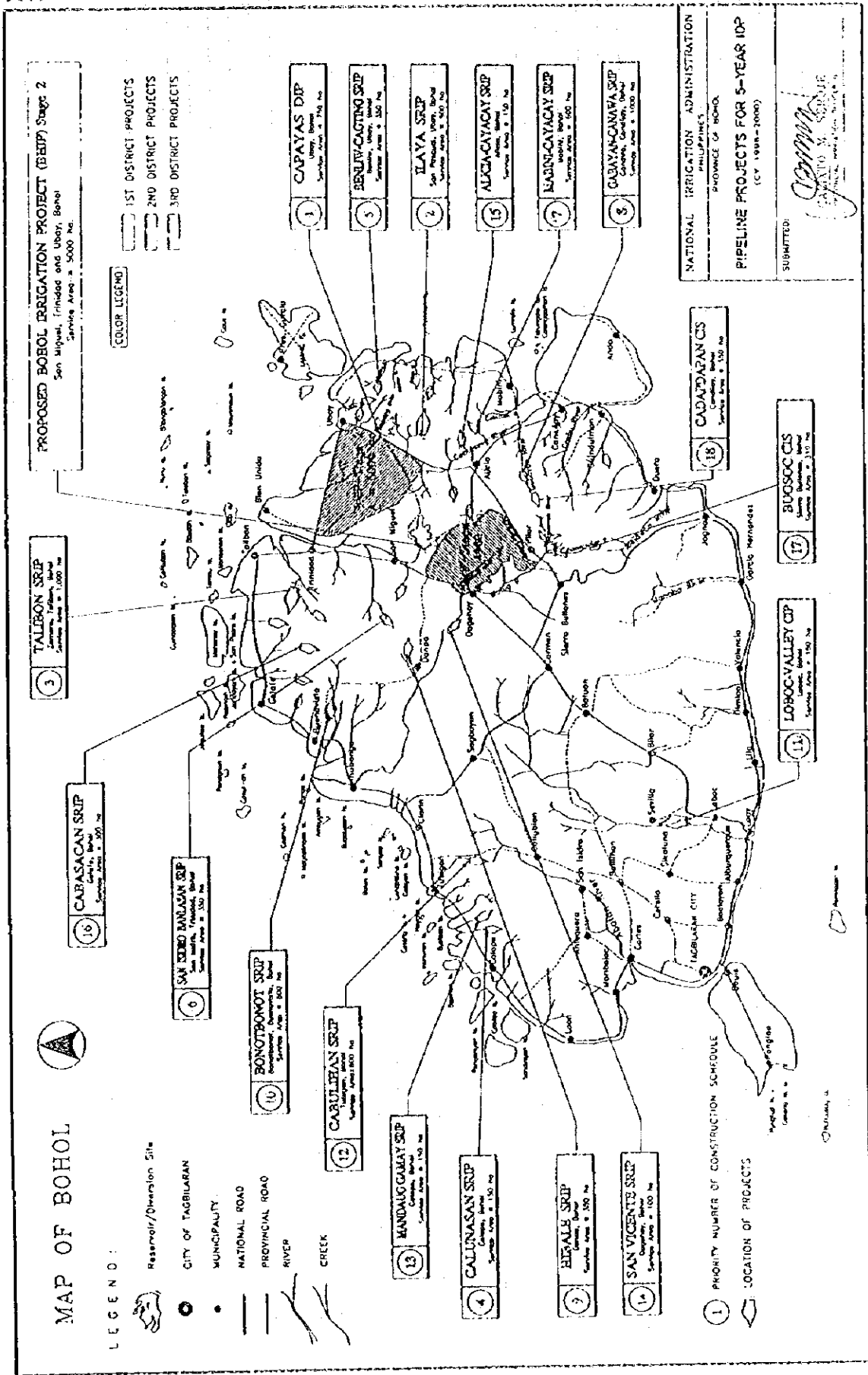
REGION/PROVINCE	WET SEASON (MAY-JULY)	PALAGAO (OCT-DEC)	DRY SEASON (FEB-MAR)	TOTAL
SOUTHERN MINDANAO	31,901	14,700	5,544	52,145
1. DAVAO DEL NORTE	11,465	5,283	2,346	19,094
2. DAVAO DEL SUR	6,344	2,973	1,006	10,323
3. DAVAO ORIENTAL	1,810	834	381	3,025
4. SARANGANI	1,252	576	193	2,021
5. SOUTH COTABATO	11,030	5,034	1,618	17,682
CENTRAL MINDANAO	71,104	17,715	5,046	93,865
1. LANA O DEL NORTE	12,461	3,168	906	16,535
2. N. COTABATO	31,793	8,574	2,440	42,807
3. SULTAN KUDARAT	26,850	5,973	1,700	34,523
CARAGA	18,396	8,750	3,420	30,566
1. AGUSAN NORTE	2,620	2,093	436	5,149
2. AGUSAN SUR	5,081	2,026	1,001	8,108
3. SURIGAO NORTE	4,847	2,305	772	7,924
4. SURIGAO SUR	5,848	2,326	1,211	9,385
ARMM	19,416	5,385	2,754	29,555
1. LANA O SUR	4,800	2,035	1,000	7,835
2. MAGUINDANAO	14,616	3,350	1,754	19,720
GRAND TOTAL	730,000	350,000	120,000	1,200,000

REGION/PROVINCE	WET SEASON (MAY-JULY)	PALAGAO (OCT-DEC)	DRY SEASON (FEB-MAR)	TOTAL
CAR	2,500	1,500	1,500	5,500
1. BENGUET	500	500	500	1,500
2. IFUGAO	2,000	1,000	1,000	4,000
SOUTHERN LUZON	18,138	7,044	3,299	28,481
1. BATANGAS	4,917	1,908	893	7,718
2. MARINDUQUE	5,090	1,976	924	7,990
3. RIZAL	4,620	1,793	839	7,252
4. ROMBLON	3,511	1,367	643	5,521
BICOL REGION	2,333	889	456	3,677
1. CATANDUANES	794	296	152	1,242
2. MASBATE	1,539	592	304	2,435
WESTERN VISAYAS	201	116	53	370
1. GUIMARAS	201	116	53	370
CENTRAL VISAYAS	1,920	923	445	3,288
1. CEBU	1,559	718	345	2,622
2. SIOUIJOR	361	205	100	666
WESTERN MINDANAO	490	132	61	683
1. BASILAN	490	132	61	683
NORTHERN MINDANAO	283	170	84	537
1. CAMIGUIN	283	170	84	537
SOUTHERN MINDANAO	1,682	766	286	2,734
1. DAVAO CITY	1,682	766	286	2,734
GRAND TOTAL	27,547	11,539	6,184	45,270

(1) ポホー儿灌漑計画概要図 (第2期)

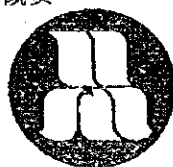


(1) 水ホ一ル灌漑計画概要図 (第2期)





(2) 灌溉計画概要



Republic of the Philippines  
**NATIONAL IRRIGATION ADMINISTRATION**  
Region VII

----- 0 -----  
**BOHOL PROVINCIAL IRRIGATION OFFICE**  
Dao District, City of Tagbilaran - 6300  
Tel. No. 411-3372

PROVINCE OF BOHOL  
IRRIGATION DEVELOPMENT STATUS AND PROGRAM  
AS OF DECEMBER, 1995

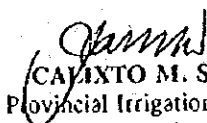
A. STATUS

1. Total land area (Ha.)	-----	411,726
2. Arable (Ha.)	-----	256,400
3. Riceland Area (Ha.)	-----	29,617
4. Potential Irrigable Area (Ha.)	-----	40,800
5. Service area of about 225 existing Communal & National Irrigation Systems (Ha.)	-----	13,892
6. Irrigation Development Status	-----	34.05%

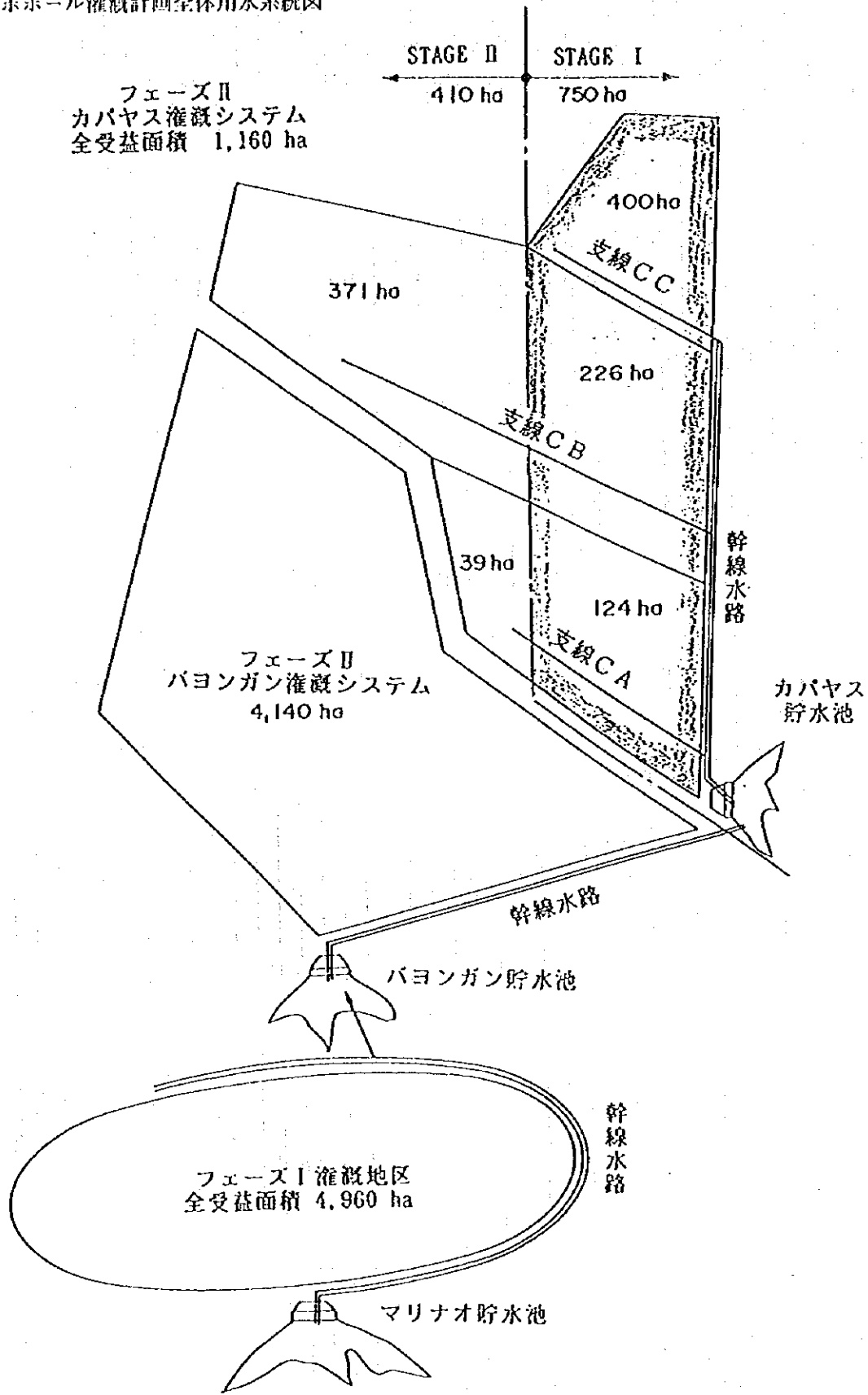
B. PROGRAM

<u>CATEGORY</u>	<u>AREA (Ha.)</u>	<u>PERCENTAGE (%)</u>
I. Present Irrigation Development		
Communal Irrigation Systems	8,582	21.03%
Capayas Irrigation System	350	0.86%
BHIP - Stage 1	4,960	12.16%
<b>TOTAL FOR I</b>	<b>13,892</b>	<b>34.05%</b>
II. Future Irrigation Development		
1. BHIP - Stage II	5,000	12.25
2. BHIP - Stage III	3,450	8.46
3. SWIM Projects	16,248	39.82
4. Pumps & Farm Ponds	2,210	5.42
<b>TOTAL for II</b>	<b>26,908</b>	<b>65.95%</b>
<b>OVERALL</b>	<b>40,800</b>	<b>100.00%</b>

Prepared & submitted by:

  
CALIXTO M. SEROJE  
Provincial Irrigation Officer II  
and  
Concurrent Project Manager  
Bohol Irrigation Project Stage - I

(3) ボホール灌漑計画全体用水系統図





(4) 水利組合 ( I A ) の機能

- 1) 第一に政府による農地改革及び共同体開発計画強化の母体として機能を果たす。
- 2) NIAの委員会が果たす諸条件のもとで、NIAを助け、最終的にかんがいシステムの維持管理全体もしくは一部の役割を担う。
- 3) 技術的な面での政府及び民間機関とのチャンネルとしての機能を果たす。
- 4) ローン、土地の譲渡及び水利費の支払い、予定された買い付け人への農産物の即金販売並びに農民への計画的な食料分配のための触媒として動き、かつ農家と関係者との同様な取引を容易にする。
- 5) 健全な共同体生活を促進するためかんがい農家の参加を奨励する。
- 6) それによる水利用者のためになる農業活動の実施を増やしながら継続的団体活動及び共同作業を促進する。
- 7) メンバー内での計画に基づいた儉約的プログラムを実施する。
- 8) 発展過程の部分として水利組合のメンバー及び役員のための継続的な教育及び研修プログラムの実施を促進する。
- 9) 関係機関組織と連携強化を図る。

Organization: There are four(4) Irrigators' Associations duly registered by the Securities and Exchange Commission (SEC) on February of 1992 having a term of 50 years from and after the date of the issuance of the certificate of incorporation. Below are other details :

NAME OF IA	MEMBERSHIP	NO. of BODs
1. UBAY-CAPAYAS LATERAL A IA INC	47	9
2. UBAY-CAPAYAS LATERAL B IA INC	25	9
3. UBAY-CAPAYAS LATERAL C&C2 IA INC	74	9
4. UBAY-CAPAYAS LATERAL C1 IA INC	42	9

(5) カバヤス・ダムの高上げ計画

1. 目的；BHIP-ステージ1、2プロジェクトを通じての計画を策定しているが、その計画について近年の水文データ等で見直しを行うと、カバヤス・ダム、マリナオ・ダムが、容量に不安があることが判明した。カバヤス・ダムについて750haの灌漑を可能にするためには約1,800,000㎥不足することが判明したので、2.5m嵩上げすることになる。

2. 計算ステージ；原則的にカバヤス地区は、マリナオ、バヨンガン・ダムからの補給を受ける計画とする。

灌漑消費水量 ; 150㎥/day/ha

連続干天日数 ; 30日

現在のダム容量 ; 1,600,000㎥

現在のダム容量に対する灌漑可能面積 ;  $1,600,000 / 30 * 150 = 355\text{ha}$

灌漑面積に対する必要ダム容量 ;  $750 * 150 = 3,375,000\text{㎥}$

不足容量 ;  $3,375,000 - 1,600,000 = 1,800,000\text{㎥}$  —— 2.5m嵩上げ

3. 検証

水収支、ダム容量計算は再度ステージ1、2、3を通じて水管理部門で検討を図る必要がある。

## CAPAYAS IRRIGATION PROJECT : HEEL INCREASING PLAN

### CALCULATION OF WATER BALANCE :

$$\begin{aligned} \text{Water requirement} &= 1.5 \text{ liter/sec} \\ &= 150 \text{ cu. m. /day-ha} \end{aligned}$$

- 30 days no rainfall experienced in Bohol
- water volume in Dam = 1,600,000 cu. m.

$$A = \frac{1,600,000 \text{ cu. m.}}{30 \text{ days } (150 \text{ cu.m./day-ha})}$$

$$A = 355 \text{ ha.}$$

If area to be irrigated is 750 ha.

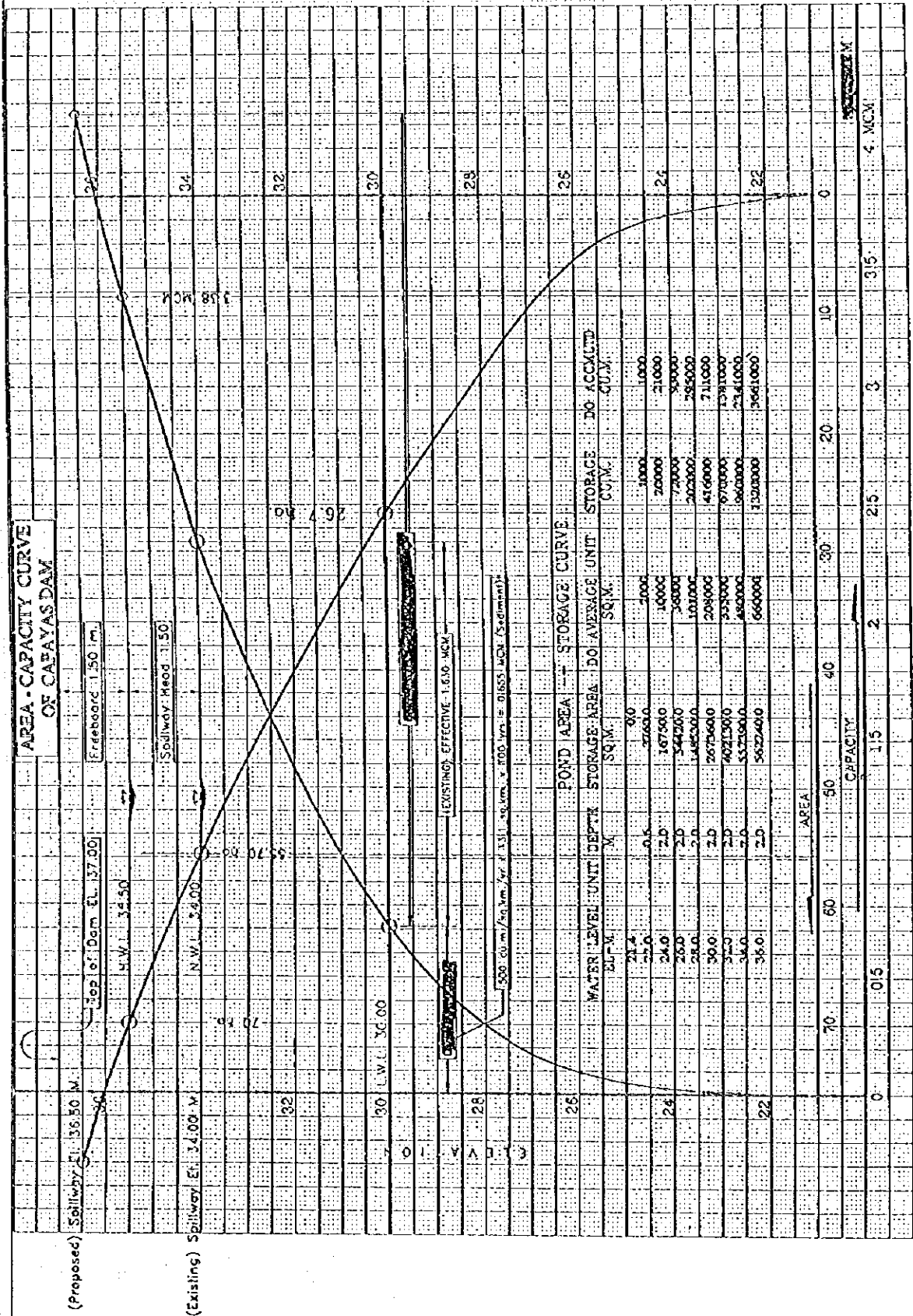
$$\begin{aligned} \text{Volume of water in dam} &= 750 \text{ ha } (30 \text{ days}) (150 \text{ cu.m./day-ha}) \\ &= 3,375,000 \text{ cu.m.} = 3.4 \text{ m cu.m.} \end{aligned}$$

Increasing Dam height by 2.5 meters will increase volume of water by 1.8 million cu.m.

$$\text{Original volume} = 1.6 \text{ m cu.m.}$$

$$\text{Additional volume} = 1.8 \text{ m cu.m.} \quad (2.5 \text{ m heel increase})$$

$$\text{Total} \quad \quad \quad 3.4 \text{ m cu.m.}$$









JICA

