

[資料]

資料 1.	調査団の団員構成	A1-1
資料 2.	調査行程	A2-1
資料 3.	エジプト国関係者リスト	A3-1
資料 4.	エジプト国の社会・経済状況	A4-1
資料 5.	討議議事録	A5-1
資料 6.	事前評価表	A6-1
資料 7.	参考資料/入手資料リスト	A7-1
資料 8.	その他の資料・情報	A8-1
A	ポンプ場機材の交換・更新に関する評価	A8-A-1
B	ポンプ場機材計画	A8-B-1
C	ポンプ設備の故障・補修履歴	A8-C-1
D	ポンプ運転時間・送水量	A8-D-1
E	イギグ加圧ポンプ原動機出力の算定	A8-E-1
F	事務所経費及び維持管理費に必要な経費の算出	A8-F-1
G	営農関連資料	A8-G-1
H	灌漑システム用水ネットワーク図	A8-H-1
I	農家調査結果、水利組合インベントリ調査結果	A8-I-1
J	農業パイロットセンター(APC)の概要	A8-J-1
K	末端灌漑施設維持管理の契約内容	A8-K-1

資料1. 調査団の団員構成

フィリピン共和国カガヤン灌漑施設改修計画基本設計調査団

総括・計画管理	： 矢部 哲雄	国際協力事業団 無償資金協力部審査室主任審査員 調査役
技術参与	： 小賀 正樹	農林水産省 近畿農政局 計画部事業計画課農地整備第1係長
協力計画	： 若林 基治	国際協力事業団 無償資金協力部業務第4課
業務主任/河川・水文	： 近藤 達	三・コンサルタンツ
灌漑施設計画/維持管理計画	： 寺村 靖夫	三・コンサルタンツ
機材計画/維持管理計画	： 高橋 徹	三・コンサルタンツ
営農計画/水管理計画	： 松原 八寿雄	三・コンサルタンツ
自然条件調査	： 山川 精一	三・コンサルタンツ
積算/調達/施工計画	： 広田 浩介	三・コンサルタンツ

フィリピン共和国カガヤン灌漑施設改修計画基本設計調査 概要説明調査団

団長	： 吉田 勝美	国際協力事業団 無償資金協力部業務第4課課長
計画管理	： 今村 誠	国際協力事業団 フィリピン事務所
業務主任/水文計画	： 近藤 達	三・コンサルタンツ
灌漑施設計画/維持管理計画	： 寺村 靖夫	三・コンサルタンツ
機材計画/維持管理計画	： 高橋 徹	三・コンサルタンツ

資料2. 調査行程

第1回現地調査

日順	月日	曜日	官側調査団	コンサルタント団員					
				① 業務主任/ 河川・水文	② 灌漑施設計画/ 設計/維持管理計画	③ 機材計画/ 維持管理計画	④ 営農計画/ 水管理計画	⑤ 自然条件調査	⑥ 積算/調達 施工計画
1	2002 9/30	月		移動(日本→マニラ)					①～④に同じ
2	10/1	火		JICAマニラ事務所表敬および打合せ、NIA表敬・打合せ・インセプションレポート説明、協議(質問票回答依頼を含む)					〃
3	10/2	水		移動(マニラ→ツゲガロ)、NIAと協議					〃
4	10/3	木		NIAと協議(日程、カウンターパートなど)					〃
5	10/4	金		全体地区踏査					〃
6	10/5	土		移動(ツゲガロ→マニラ)	全体地区調査				②～④に同じ
7	10/6	日	移動(成田→マニラ)	資料整理	団内ミーティング				〃
8	10/7	月	JICA、大使館表敬、NIAと協議	既施設調査	既施設調査	営農調査		現地調査	
9	10/8	火	世銀、ADB表敬、NIA協議	〃	〃	〃		資機材関連調査	
10	10/9	水	移動(マニラ→ツゲガロ)	〃	〃	〃		〃	
11	10/10	木	現地調査	〃	〃	〃		運搬路調査	
12	10/11	金	〃	〃	〃	〃		〃	
13	10/12	土	移動(ツゲガロ→マニラ)	〃	〃	〃		労務関連調査	
14	10/13	日	団内会議	資料整理			移動(成田→マニラ)	資料整理	
15	10/14	月	NIA及び関係官庁協議	プロジェクトの実施体制、実行能力に係る調査	ベースライン調査		移動(マニラ→ツゲガロ)	先方負担分施設調査	
16	10/15	火	NIA及び関係官庁協議	〃		〃	再委託調査監督	単価調査	
17	10/16	水	ミニッツ署名、JICA、大使館報告	〃		〃	〃	〃	
18	10/17	木	移動(マニラ→成田)	移動(マニラ→ツゲガロ)	農業基盤調査	所有建築機材調査	IA調査、農家調査	水位計観測地点調査	
19	10/18	金		現地踏査	〃	〃	〃	〃	
20	10/19	土		現地踏査	〃	〃	〃	〃	
21	10/20	日		団内ミーティング					
22	10/21	月		第2管区灌漑事務所表敬およびマゴット地区調査		APCにて営農調査	再委託調査監督	施工歩掛り調査	
23	10/22	火		水利組合に対する考え方調査					〃
24	10/23	水		NIA運営強化計画に対する調査	ポンプ整備市場調査	営農計画調査	気象データ収集		
25	10/24	木		〃	〃	〃	〃	施工歩掛り調査	
26	10/25	金		〃	〃	〃	排水状況調査	単価調査	
27	10/26	土		移動(ツゲガロ→マニラ)					移動(ツゲガロ→マニラ)
28	10/27	日		団内ミーティング					団内ミーティング
29	10/28	月		JICAマニラ事務所報告			再委託調査監督	JICAマニラ事務所報告	
30	10/29	火		移動(マニラ～日本)			〃	移動(マニラ～成田)	
31	10/30	水					Lab試験監督		
32	10/31	木					〃		
33	11/1	金					移動(ツゲガロ→マニラ)		
34	11/2	土					移動(マニラ→成田)		

第2回現地調査

日順	月日	曜日	官側調査団	コンサルタント団員					
				① 業務主任/ 河川・水文	② 灌漑施設計画/ 設計/維持管理計画	③ 機材計画/ 維持管理計画	④ 営農計画/ 水管理計画	⑤ 自然条件調査	⑥ 積算/調達 施工計画
1	2003 1/13	月		移動(成田→マニラ)、 JICAマニラ事務所表敬 及び打合せ			①に同じ	①に同じ	
2	1/14	火		NIAと協議			〃	〃	
3	1/15	水		移動(マニラ→ツゲガロ)、 NIAと協議			〃	〃	
4	1/16	木		河川状況調査			ベースライン調査対象 農家への調査	水象調査	
5	1/17	金		〃			〃	〃	
6	1/18	土		〃			〃	〃	
7	1/19	日		灌漑施設運用状況調 査(IA含む)			IA調査	〃	
8	1/20	月		既施設調査			営農調査	排水状況調査	
9	1/21	火		〃			〃	〃	
10	1/22	水		移動(ツゲガロ→マニラ)			①に同じ	①に同じ	
11	1/23	木		NIA本部補足調査			〃	〃	
12	1/24	金		JICAマニラ事務所報告			〃	〃	
13	1/25	土		移動(マニラ→成田)			〃	〃	

資料3 フィリピン国関係者リスト

氏 名	所 属
日本大使館	
植野 栄治	一等書記官
国際協力事業団 フィリピン事務所	
中垣 長睦	Resident Representative
高田 裕彦	Deputy Resident Representative
小原 基文	Deputy Resident Representative
今村 誠	Assistant Resident Representative
国際協力銀行	
上野 和彦	駐在員
NEDA National Economic and Development Authority	
Ameta B. Benjamin	Senior Economic Development Specialist, Public Investment Staff
Dick J. Boebe	Public Investment Staff
Milagros A. Rimando	Regional Director
Rufino C. Guinto	Office in charge - Chief, Water Resources Division
Katherine D. Firmeza	Senior Economic Development Specialist, Agriculture Staff-Rural Infrastructure & Institutions Division
Ramoncito V. Reginaldo	Senior Economic Development Specialist, Infrastructure Development Division, NEDA Region II
DA Department of Agriculture	
仲田 俊一	JICA 専門家
Ibarra T.C. Poliquit	Assistant Secretary and Chief of Staff, Office of the Secretary
Felix Jose S. Montes	Director, Project Development Services
Cecilia Q. Astilla	Director, PDS – DA
Gumersindo D. Lasam	Regional Executive Director
Robema A. Bolijor	Project Development Office, Project Development Services
Vilentino C. Perdido	Chief Crops Division, Department of Agriculture, Region II
Restituto Espanol Samatra	Supervising Agriculturist, Regional Agricultural Engineering Group, Department of Agriculture, Region II
Ronald P. Isidro	Senior Agriculturist, Agribusiness Section, DA, Region II
Elena U. Rivera	Bureau of Agricultural Statistics, Region II

NIA National Irrigation Administration	
小澤 與宏	JICA 専門家
吉岡 敏幸	JICA 専門家
Jesus Emmanuel M. Paras	Administrator
Antonio A. Galvez	Assistant-Administrator for Project Development Improvement
Isidro B. Degal	Assistant-Administrator for System Operation and Equipment Management
Edilberto B. Punzal	Manager Project Development Department
Romulo A. Ramirez	Division Manager, Project Formulation Department, Project Development Department
Leonardo E. Balite	Division Manager, Operation and Maintenance, SMD
Rodolfo D. Gales	Division Manager, Design division, Design and Specification Department
Vicente E. Galvez	Regional Irrigation Manager, Region II
Leonard B. Villiegas	Superintendent, Iguig-Alcala-Amulung Pump Irrigation System
Hector P. Cardenas	Superintendent, Magapit Pump Irrigation System
Teranciana A. Cureg	Institutional Development Officer, IAAPIS
Fernand M. Costales	Mechanic Engineer, Operation & Maintenance Section, IAAPIS
Angelito C. Ramos	Water Resources Facilities Technician, IAAPIS
Romulo V. Carenas	Water Resources Facilities Technician
Antonio S. Fernandez	Water Resources Facilities Technician
Loreuzo Sioba	Water Resources Facilities Technician
Mario C. ticaa	Sectoion Head, MPIS
Ricardo M. Agustin	Sectoion Head of Equipment Section, MPIS
Menardo C. Paras	Electric Engineer, Equipment Section, MPIS
Leueo C. Bulseco	Institutional Development Officer, MPIS
Daniel Gonzalbo	Operation & Maintenance Division, RegionII
Damian F. Belingon Jr.	Hydrologist, RegionII
Larry Bulseco	Irrigation Development Officer, Institutional Division, Pumping Irrigation System
DPWH Department of Public Works and Highway	
Zoisimo Balisi	Engineer, Planning & Design Div. DPWH CAGAYAN
Victor Espanol	Hydrologist, Materials Quality Control Div. DPWH CAGAYAN
Commission on Population	
Nancy D. Barasi	Administrative Officer, Commission on Population, Region II

NSO National Statistics Office	
Severino G. Capili	Regional Director, NSO, Region II
Jovencio A. Sibal	Library, NSO, Region II
DAR Department of Agrarian Reform	
Paranon D. Furigay	Agrarian Reform Officer, Cagayan Provincial Office, Department of Agrarian Reform
NFA National Food Authority	
Cesario P. Pagulayan	Assistant Provincial Manager, Cagayan Provincial Office, National Food Authority
LBP Land Bank of the Philippines	
Danilo C. Viernes	Head, Lending Center, Land Bank of the Philippines – Northern Cagayan Valley
PCIC Philippines Crop Insurance Corporation	
Eladio C. Battung	Vice President for Luzon, Philippine Crop Insurance Cooperation
APC Agricultural Pilot Center	
Lorenz Caranguian	Manager, Agricultural Pilot Center
Vicente Miguel	Researcher, Agricultural Pilot Center
Municipality Office	
Antonio A. Danko	Municipality Assessor, Amulung Municipality
Janet Accad	Municipal Agriculturalist, Amulung Municipality

資料4. 当該国の社会経済状況

2003年3月24日

フィリピン共和国
Republic of the Philippines

一般指標				
政体	立憲共和制	*1	首都	マニラ (Manila) *2
元首	大統領/グロリア・マカパガル・アロヨ (Gloria Macapagal ARROYO)	*1,3	主要都市名	ダバオ、セブ、サンボアング *3
独立年月日	1946年7月4日	*3,4	労働力総計	31,865千人 (2000年) *6
主要民族/部族名	マレイ系、中国人、スペイン系	*1,3	義務教育年数	6年間 () *13
主要言語	タガログ語を基本とするフィリピン語、英語	*1,3	初等教育就学率	% (1998年) *6
宗教	カトリック83%、その他のキリスト教10%	*1,3	中等教育就学率	% (1998年) *6
国連加盟年	1945年10月24日	*12	成人非識字率	4.6% (2000年) *13
世銀加盟年	1945年12月27日	*7	人口密度	253.48人/km2 (2000年) *6
IMF加盟年	1945年12月27日	*7	人口増加率	2.3% (1980-2000年) *6
国土面積	299.40千km2	*1,6	平均寿命	平均 69.00 男 67.00 女 71.10 *10
総人口	75,580千人 (2000年)	*6	5歳児未満死亡率	39/1000 (2000年) *6
			カロリー供給量	2,366.0 cal/日/人 (1997年) *10

経済指標				
通貨単位	ペソ (Peso)	*3	貿易量	(2000年)
為替レート	1 US \$ = 53.37 (2002年12月)	*8	商品輸出	37,298百万ドル *15
会計年度	Dec. 31	*6	商品輸入	-30,381百万ドル *15
国家予算	(1999年)		輸入カバー率	4.0(月) (1999年) *14
歳入総額	478,210 Millions of Pesos	*9	主要輸出品目	電子・電気機器、輸送用機器等 *1
歳出総額	585,435 Millions of Pesos	*9	主要輸入品目	通信・電気機器、電子部品 *1
総合収支	-376百万ドル (2000年)	*15	日本への輸出	6,452百万ドル (2001年) *16
ODA受取額	577.7百万ドル (2000年)	*18	日本からの輸入	8,228百万ドル (2001年) *16
国内総生産(GDP)	74,732.73百万ドル (2000年)	*6		
一人当たりのGNI	1,040.0ドル (2000年)	*6	総国際準備	8,675.9百万ドル (2000年) *6
分野別GDP	農業 15.9% (2000年)	*6	対外債務残高	50,062.9百万ドル (2000年) *6
	鉱工業 31.1% (2000年)	*6	対外債務返済率(DSR)	13.6% (2000年) *6
	サービス業 52.9% (2000年)	*6	インフレ率	8.2% *6
産業別雇用	農業 男 46.7% 女 26.9% (1998-2000年)	*6	(消費者価格物価上昇率)	(1990-2000年)
	鉱工業 17.5% 12.5% (1998-2000年)	*6		
	サービス業 35.8% 60.7% (1998-2000年)	*6	国家開発計画	中期経済開発計画 (1999~2004年) *11
実質GDP成長率	3.3% (1990-2000年)	*6		

気象 (1961年~1990年平均) 観測地: マニラ (北緯14度31分、東経121度00分、標高15m) *4.5													
月	1	2	3	4	5	6	7	8	9	10	11	12	平均/計
降水量	14.6	3.8	5.2	10.2	113.3	257.1	306.3	377.1	300.9	223.3	109.4	48.1	1769.3 mm
平均気温	25.5	26.0	27.5	29.0	29.4	28.4	27.7	27.3	27.7	27.2	26.9	25.9	27.4 °C

- *1 各国概況 (外務省)
 - *2 世界の国々一覧表 (外務省)
 - *3 世界年鑑2000 (共同通信社)
 - *4 最新世界各国要覧10訂版 (東京書籍)
 - *5 理科年表2000 (国立天文台編)
 - *6 World Development Indicators2002(WB)
 - *7 BRD Membership List(WB)
 - IMF Members' Financial Data by Country(IMF)
 - *8 Universal Currency Converter
 - *9 Government Finance Statistics Yearbook 2000 (IMF)
 - *10 Human Development Report2000,2001(UNDP)
 - *11 Country Profile(EIU),外務省資料等
 - *12 United Nations Member States
 - *13 Statistical Yearbook 1999(UNESCO)
 - *14 Global Development Finance2001(WB)
 - *15 International Financial Statistics Yearbook 2001(IMF)
 - *16 世界各国経済情報ファイル2002(世界経済情報サービス)
- 注: 商品輸入については複式簿記の計上方式を採用しているため
支払い額はマイナス表記になる

	フィリピン共和国
	Republic of the Philippines

項目	年度	1995	1996	1997	1998	1999
技術協力		74.63	78.51	75.82	77.83	72.77
無償資金協力		103.23	107.31	89.93	59.11	101.72
有償資金協力		1,485.44	1,242.80		1,570.11	1,357.40
総額		1,663.30	1,428.62	165.75	1,707.05	1,531.89

項目	暦年	1995	1996	1997	1998	1999
技術協力		114.43	94.34	89.25	80.68	92.08
無償資金協力		121.08	91.14	68.21	78.34	82.23
有償資金協力		180.62	228.96	161.51	138.54	238.68
総額		416.13	414.45	318.98	297.55	412.98

	贈与 (1) (無償資金協力・ 技術協力)	有償資金協力 (2)	政府開発援助 (ODA) (1)+(2)=(3)	その他政府資金 及び民間資金(4)	経済協力総額 (3)+(4)
二国間援助 (主要供与国)	338.0	164.3	502.3	603.7	1,106.0
1. Japan	157.1	147.4	304.5	1,437.9	1,742.4
2. United States	62.9	12.6	75.5	-415.0	-339.5
3. Australia	35.1	0.0	35.1	18.2	53.3
4. Germany	23.3	0.0	23.3	158.0	181.3
多国間援助 (主要援助機関)	42.2	30.0	72.2	-197.4	-125.2
1. EC			27.6	0.3	27.9
2. AsDB			22.3	-6.2	16.1
その他	3.4	-0.1	3.3	5.1	8.4
合計	383.6	194.1	577.7	411.5	989.2

技術協力：国家経済開発庁 (NEDA) (National Economic Development Authority)
無償：国家経済開発庁 (NEDA) (National Economic Development Authority)
協力隊：国家ボランティア事業調整庁 (PNVSCA) (Philippine National Volunteer Service Coordination Agency)

- *17 我が国の政府開発援助2000(国際協力推進協会)
 *18 International Development Statistics (CD-ROM) 2002 OECD
 *19 JICA資料

資料 5. 討議議事録

(1) 基本設計現地調査時

MINUTES OF DISCUSSIONS
ON
THE BASIC DESIGN STUDY
ON THE PROJECT FOR
REHABILITATION OF
CAGAYAN IRRIGATION FACILITIES
IN
THE REPUBLIC OF THE PHILIPPINES

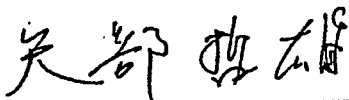
In response to a request from the Government of the Republic of the Philippines, the Government of Japan decided to conduct a Basic Design Study on the Project for Rehabilitation of Cagayan Irrigation Facilities (hereinafter referred to as "the Project") and entrusted the study to the Japan International Cooperation Agency (hereinafter referred to as "JICA").

JICA sent to the Philippines the Basic Design Study Team (hereinafter referred to as "the Team"), which is headed by Mr. TETSUO YABE, Senior Assistant to the Managing Director of Grant Aid Management Department, JICA, and is scheduled to stay in the country from 30 September to 2 November, 2002.

The Team held discussions with the officials concerned of the Government of the Philippines and conducted a field survey at the study area.

In the course of discussions and field survey, both parties confirmed the main items described on the attached sheets. The Team will proceed to further works and prepare the Basic Design Study Report.

Manila, 16 October, 2002

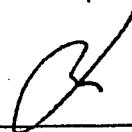


Mr. TETSUO YABE

Leader

Basic Design Study Team

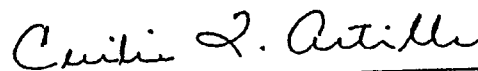
Japan International Cooperation Agency



Mr. JESUS EMMANUEL M. PARAS

Administrator

National Irrigation Administration



Ms. CECILIA Q. ASTILLA

Director,

Project Development Services,

Department of Agriculture

ATTACHMENT

1. Objective of the Project

The objective of the Project is to rehabilitate the existing irrigation facilities and equipment, which have lost their proper performance and function on the existing two irrigation systems, the Iguig-Alcala-Amulung Pump Irrigation System (IAAPIS) and the Magapit Pump Irrigation System (MPIS).

2. Project site

The site of the Project is located in the seven towns (Iguig, Amulung, Alcala, Lallo, Camalaniugan, Aparri and Buguey) in the Province of Cagayan, as shown in Annex-1.

3. Responsible and Implementing Agency

The responsible and implementing agency is National Irrigation Administration (NIA) as shown in Annex.2.

4. Items requested by the Government of the Philippines

After discussion with the Team, the items described in Annex-3 were finally requested by the Philippine side. JICA will assess the appropriateness of the request and will recommend to the Government of Japan for approval.

5. Japan's Grant Aid Scheme

- 5-1. The Philippine side has understood the Japan's Grant Aid Scheme explained by the Team, as described in Annex-4.
- 5-2. The Philippine side will undertake the necessary measures, as described in Annex-5, for smooth implementation of the Project, as a condition for the Japanese Grant Aid to be implemented.

6. Schedule of the Study

- 6-1. Consultants will proceed to further studies in the Philippines until 2 November, 2002.
- 6-2. JICA will prepare the draft report in English and dispatch a mission in order to explain its contents around February, 2003.
- 6-3. In case that the contents of the report is accepted in principle by the Government of the

Philippines, JICA will complete the final report and send it to the Government of the Philippines by April, 2003.

7. Other relevant issues

7-1. Both sides confirmed that the scope of the Project basically targeted on the facilities and equipment which was constructed and procured under Cagayan Integrated Agricultural Development Project (hereinafter referred to as "CIADP"), and aimed on the recovering of the performance of CIADP.

7-2. In the Study, the Team confirmed that what the irrigation systems in CIADP didn't work appropriately was caused by 1) natural disasters like increasing of sediment and shifting of river course, 2) deterioration of the facilities and equipment, and 3) the lack of operation and maintenance of irrigation facilities, such as the excavations of sediment in canal, and so on. The Team expressed that the Philippine side, first, shall essentially take necessary measures for operation and maintenance of the facilities and pumping equipment of CIADP, and then Japanese side would assess the feasibility of the Project as the rehabilitation program of Grant Aid.

7-3. Both sides confirmed the appropriate operation and maintenance for the facilities and pumping equipment of CIADP shall be minimum condition for implementing the Project. The Philippine side expressed to make the operation and maintenance programs for the facilities and pumping equipment of CIADP until the end of 2002, and implement it immediately.

7-4. The requested items described in Annex-3 will be further examined and determined in the course of the study by the Team in consideration of following criteria as the rehabilitation program of Grant Aid.

- i) Facilities and equipment in scope of CIADP
- ii) Natural conditions, especially for the possible flood and shifting of river course
- iii) Managerial, technical and administrative viability
- iv) Maintenance and running cost
- v) Effectiveness against the cost estimation
- vi) Budgetary allocation of Japanese side

vii) Financial viability

viii) No duplication of similar support by the Government of the Philippines and other donors

7-5. The Team explained to the Philippine side that there shall be no duplications among the Project, "Water Resources Development Project" and "Irrigated Operation Support Project 2" implemented under assistance of the World Bank. The Philippine side understood above-mentioned explanation and expressed there were no such duplications in requested items as shown in Annex-3.

7-6. The Team confirmed the progress of strengthening of NIA was proceeding on the basis of

"The Study on Strengthening of NIA Management System" implemented by JICA in 2001.

7-7. NIA will allocate from its 2003 budget the funds for the Value-Added Tax (VAT) imposed on Japanese Nationals with respect to the payment carried out for and income accruing from the supply of the products and services under verified contract. The funding strategy to show the source of funds shall be prepared by NIA.

Both sides confirmed the procedures of endorsement of VAT and termination of it as shown in Annex-6.

7-8. The Philippine side understands that in case the approval of Investment Coordination Committee (ICC) by NEDA is necessary for the Project, NIA and other relevant agencies will take necessary measures timely to prepare and deliver the requirements for ICC (including Environmental Compliance Certificate [ECC], if necessary).

Both sides confirmed the procedures of appraisal of ICC and termination of it as shown in Annex-7.

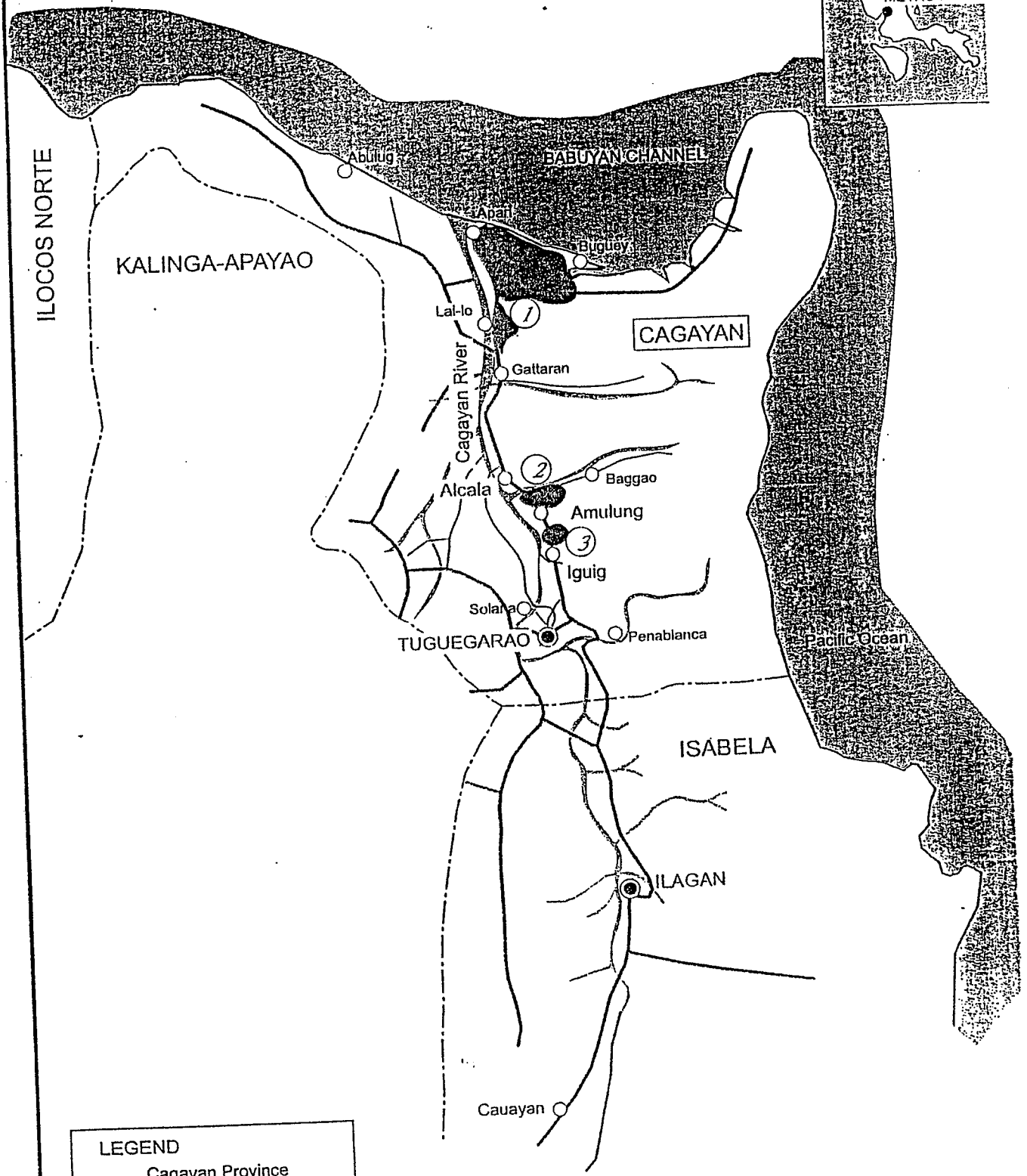
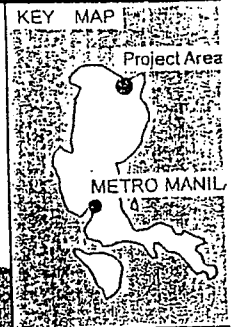
7-9. The Philippine side shall secure the necessary budget and personnel to operate and maintain the facilities and equipment of the Project.

7-10. NIA is responsible for the operation and maintenance of the facilities and equipment of the Project and also managing of Irrigators' Associations which operate and maintain canals under the Project.

7-11. Both sides confirmed that the agricultural products in the area of the Project would be mainly rice and be for domestic supply.

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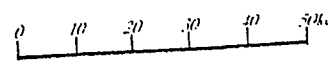
Annex 1 Project Location Map



LEGEND

- Cagayan Province
- Project Area
- Cagayan River
- Highway Road
- 2nd class Road
- Provincial Boundary
- Provincial Capital

- ① Magapit Pump Irrigation System
- ② Alcala-Almulung Pump Irrigation System
- ③ Iguig Pump Irrigation System





Republika ng Pilipinas
PAMBANSANG PANGASIWAAN NG PATUBIG
(National Irrigation Administration)
IGUIG-ALACLA-AMULUNG PUMP IRRIGATION SYSTEM
Baculud, Amulung, Cagayan

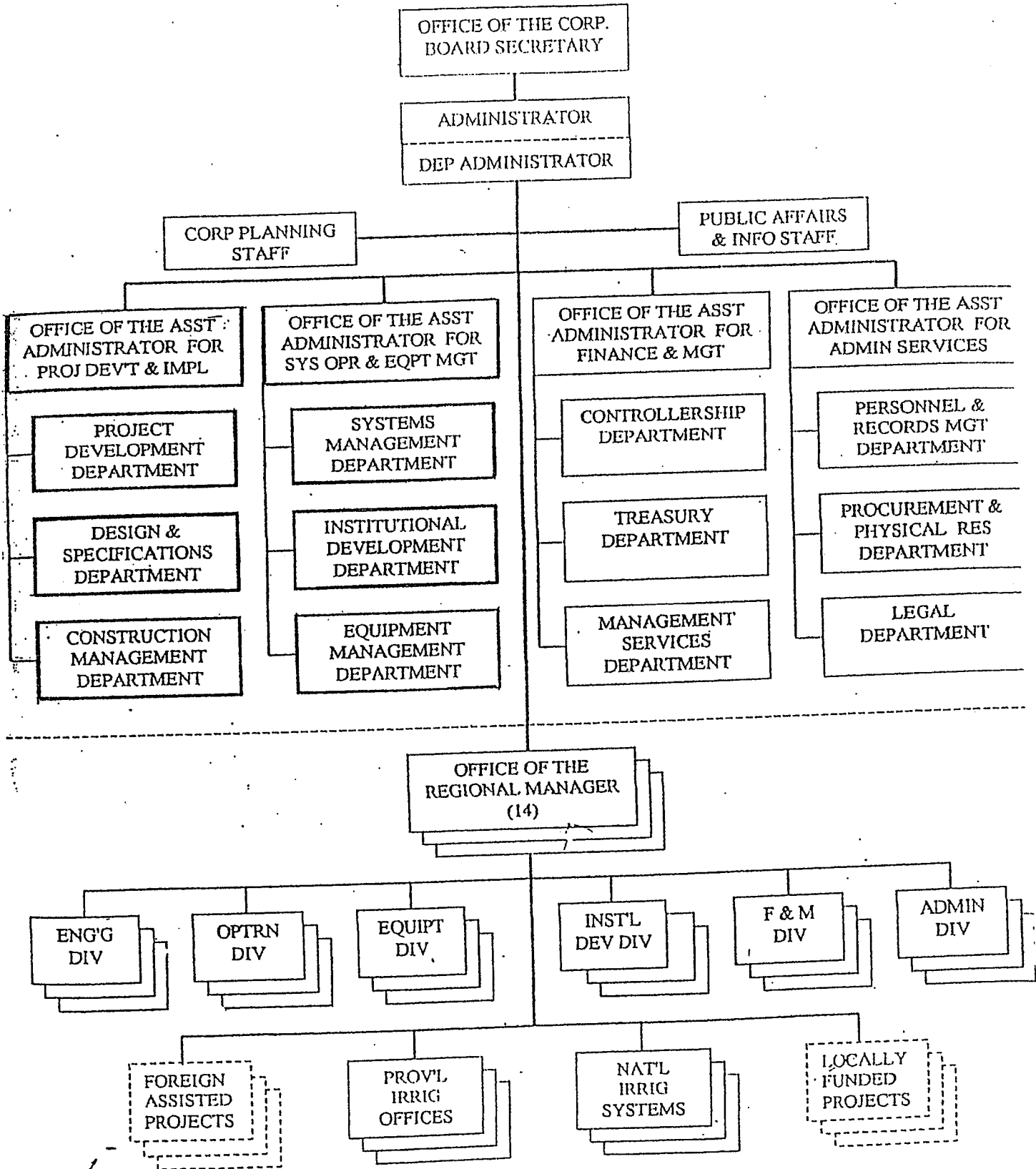


PROBLEMS AND SOLUTIONS IN THE PROPOSED REHABILITATION PROJECT OF NIA-IAAPIS

A. IGUIG PUMPING STATION

PARTICULAR	IDENTIFIED PROBLEMS	SOLUTIONS	QUANTITY	UNIT	ESTIMATED COST
I. PUMPING STATION	1. Strong leakage at main pump shaft packing due to intrusion of sand which grind the shaft.	Replacement of worn out parts of the main pump.	3	units	
	2. Main pump motors indicate faults while in operation.	Total replacement of main pump motors.	2	units	
	3. Ventilation system are already eaten by rust and the elbow portion of the air duct fell down to the floor.	Total replacement of ventilation system.	1	Unit	
	4. Shaft/Stem of the inclined steel gate was mis-aligned due to ground settlement.	Replacement with simple steel gate which is easy to operate.	1	unit	
	5. Installed lighting system are not functioning.	Install alternative lighting system which is easier to maintained			
	6. Lack of maintenance equipment for transmission line. (Electric)	Provide boom truck (Tadano) for the maintenance of transmission line.	1	Unit	
	7. Booster pump of Iguig has a very low efficiency and cannot attained its full pumping capacity due to some mechanical defect.	Total replacement of pumps and electric motors.	3	Units	
	8. Water leakage at the pump house.	Good plastering materials are needed to control leakage.	3	Units	
	9. Auxiliary panel have defective relays and controls.	For total replacement	1	Unit	

EXISTING ORGANIZATION CHART NATIONAL IRRIGATION ADMINISTRATION



PROBLEMS AND SOLUTIONS IN THE PROPOSED REHABILITATION PROJECT OF NIA-IAAPIS

A. IGUG PUMPING STATION

PARTICULAR	IDENTIFIED PROBLEMS	SOLUTIONS	QUANTITY	UNIT	ESTIMATED COST
II OPERATION AND MAINTENANCE	1. Problem on how to eliminate the very big volume of silt deposit at the pump intake	Purchased of equipment a) Amphibious Excavator b) Bulldozer (Swampy)	1 1	Unit	
	2. Siltation at Main Canals and Laterals brought out by the pumps	Constructions of settling basin at the outlet of Main Canal.	1	Unit	P 4.50 M
	3. Service road maintenance a) Road surfacing of canal Service road (Main canal Only)	Re-gravelling should be done yearly	L = 6.084 V = 3,200	Kms. Cu.m.	P 1.92 M
	4. Drainage canals are already silted, that caused low irrigation.	Excavation of drainage should be implemented to increase irrigated area during wet crop. a) Main Drainage b) Sub-Drainage	L = 2.20 V = 5,350 L = 3.80 V = 8,400	Kms. Cu.m. Kms. Cu.m.	P 0.375 M P 0.588 M

B. AMULUNG PUMPING STATION

PARTICULAR	IDENTIFIED PROBLEMS	SOLUTIONS	QUANTITY	UNIT	ESTIMATED COST
I. PUMPING STATION	1. There was a strong leakage at the main pump shaft due to intrusion of sand which grind the shaft.	Replacement of worn out parts of the main pump.	4	units	
	2. Main pump motors indicate faults while in operation.	Total replacement of main pump motors.	4	units	
	3. The inclined steel gates were not functioning because stem were already bend.	Replace with simple steel gate which is easier to operate.	2	unit	
	4. Existing lighting system installed during the project implementation are not functioning.	Installation of alternative lighting system or replace the old one.		unit	
	5. Water leakage on the wall of the pump house and basin.	Good plastering materials should be use to control the leakage.			
	6. Drainage pump motors faults while operating.	Replacement of drainage pump motors.		unit	
	7. Problems on the dead cell batteries at the sub-station.	Total replacement of Batteries a) Main Station b) Sub-Station	83 86	units	
	8. Auxiliary panel have defective relays and controls.	For total replacement	1	unit	

B. AMULUNG PUMPING STATION

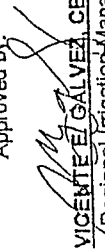
PARTICULAR	IDENTIFIED PROBLEMS	SOLUTIONS	QUANTITY	UNIT	ESTIMATED COST
II OPERATION AND MAINTENANCE	1. Maintenance of the pump intake and how to prevent siltation at the intake.	Procurement of the necessary equipment a) Amphibious Excavator b) Bulldozer (Swampy)	1 1	unit Unit	
	2. Siltation at Main Canals and Laterals brought out by the pumps.	Construction of Settling basin at the outlet of Main canal to prevent silt to scattered along the Main Canal and Laterals.	1	Unit	P 6.50 M
	3. Service road maintenance at Main Canal and Laterals	Re-gravelling should be done every year a) Main Canal b) Lateral	L = 3.3 V = 1,730 L = 1.7 V = 765	Kms. Cu.m. Kms. Cu.m.	P 1.26 M P 0.497 M
	4. Lower irrigated area during wet season because of drainage problem	Excavation of drainage must be implemented to increase irrigated area during wet season a) Main Drainage b) Sub-Drainage	L = 4.50 V = 74,400 L = 16.50 V = 59,000	Kms. Cu.m. Kms. Cu.m.	P 5.206 M P 4.130 M
	5. Service vehicle of O & M personnel in the collection of Irrigation Service Fee	Purchase of Service Vehicle a) Pick-up b) Stake Truck c) Motorcycle	1 1 10	Unit Unit Units	

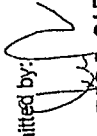
PARTICULAR	IDENTIFIED PROBLEMS	SOLUTIONS	QUANTITY	UNIT	ESTIMATED COST
	6. Defective siphon along Lateral "B" of Highline Area because of leakage problem.	Replace with elevated flume which is easier to maintain. (About 300 mts. More or less).	1	Unit	
	7. Lack of structure for Carabao crossing at Main Canal of Highline.	Construct bull cart crossing	8 (include 3)	Units	
III. Institutional/IA Strengthening Works (Both Armulung-Alcala And Iguig Area	1. Training fund for IA's on leadership, financial and system management trainings.	Provide the necessary training for IA's viability.	14	Sets	
	2. Negotiation on NIA-IA IMT contracts for the three IA's	Conduct series of meetings and dialogues for every TSA group for proper dissemination of IMT.	30	Sets	

OPERATION AND MAINTENANCE PROBLEMS AND POSSIBLE SOLUTIONS

ITEM NO.	IDENTIFIED PROBLEMS	POSSIBLE SOLUTIONS	QUAN - TITY	UNIT	Estimated Cost (Peso)
I. OPERATION AND MAINTENANCE	<p>1. Problems on Water Delivery and Distribution</p> <p>a. Defective Headgates and Check Gates of Main Canal and Lateral Canals Refer to Annex A</p> <p>b. Defective steel Gates of Turn-Outs Refer to Annex B</p> <p>Sub-Total</p> <p>2. Maintenance of Canals and Service Roads</p> <p>a. Raising of Embankment of portions of Lateral Canals Refer to Annex C</p> <p>b. Road Surfacing of Canal Service and Access Road Refer to Annex D</p> <p>c. Desilting of Sections of Main and Lateral Canals Refer to Annex E</p> <p>Sub-Total</p> <p>3. Very High Conveyance and Seepage Losses in Canals</p> <p>Sub-Total</p> <p>4. Heavy accumulation of Silt at Main Canal</p> <p>Sub-Total</p> <p>5. Lack of Post Harvest facilities for ISF Collections In Kind</p>	<p>For replacement of new steel gates CP Type</p>	14	units	1,050,000.00
		<p>For replacement of new steel gates of turn-outs</p>	65	units	1,152,000.00
		<p>For correction Fill to raise embankment, 21.33 kms</p>	60,000	cu.m	2,202,000.00
		<p>Graveling is needed every year , 42.89 kms</p>	30,072	cu.m	18,804,000.00
		<p>Mechanized desilting works, 42.86 kms</p>	75,000	cu.m	24,380,100
		<p>Proposed Concrete Lining of the following Canals</p> <p>a. Lat. E , 12.771 kms</p> <p>b. Lateral E-2, 7.225 kms</p> <p>c. Lateral E-2b, 5.635kms</p> <p>d. Lateral E-2b1,2.911kms</p> <p>e. Lateral F, 9.740kms</p> <p>f. Main Canal to Lateral G, 4.9 kms</p> <p>Construct SILT BASIN , Sta. 1+100 to Sta. 1+250 of Main Canal</p>	6,152 2,683 2,233 572 3,764 2,681 300	cu.m cu.m cu.m cu.m cu.m cu.m cu.m	22,245,358.00 9,701,652.00 8,075,881.00 2,059,180.00 13,609,955.00 9,695,758.00 2,422,308.00
		<p>Need of the following, 1 each for 10 Division, 1 for NIA Warehouse</p> <p>a. Flat Bed Dryers</p> <p>b. Moisture testers</p> <p>c. Weighing Scales, 100 Capacity Dial Type</p> <p>d. Weighing Scales, 500 Capacity portable type</p> <p>e. Vehicles, Stake Truck 5 tons Capacity</p>	11 11 11 11 5	units units units units units	66,820,092.00 cost not available

OPERATOR AND MAINTENANCE PROBLEMS / POSSIBLE SOLUTIONS		QUAN - TITY	UNIT	Estimated Cost (Peso)
ITEM NO.	IDENTIFIED PROBLEMS			
	6 Problems on Mobility of O&M Personnel a. Service Vehicle for Maintenance b. Present Motorcycle of Watermasters and Field engineers are Defective Beyond their Service Life (20 years old)	1 15	unit units	cost not available
III PUMPING STATION	1. Four (4) Intake Barrel encounters siltation every year. Manual Desilting is very expensive and difficult. 2. Main Pump Liner Rings Need Replacement 3. Maintenance of Overhead Crane for Disassembly and Assembly of Pumps 4. Worn Out Contactors of Oil Circuit Breakers 5. Defective Mechanical Controls of Switch Gears 6. Defective/Corroded Auxiliary Pipes 7. All Auxiliary Equipment of Pumps Defective See attached list of detailed activities	1,000 4 1	cu.m. units unit	refer to details prepared by equipment section.
III INSTITUTIONAL PROBLEMS/ IA STRENGTHENING WORKS	1. Irrigators Associations need Trainings on Leadership, Financial and O&M. 2. NIA and the 13 IA's officers need Regular orientation and Dialogues 3. Negotiation of NIA-IA Contracts on IMT and related activities 4. Low participation of farmers in O&M Activities Conduct TSA meetings in the 400 Turn-Outs 5. IA's do not have Office, No warehouse and Post Harvest Facilities, Lack mobility to coordinate water delivery distribution	15 150 13 400	sets/ year meeting/ year contracts/ year meetings	420,000.00 180,000.00 180,000.00 600,000.00
	POSSIBLE SOLUTIONS Purchase of 1-unit service vehicle with mounted crane Purchase motorcycles to improve mobility for field inspection, Monitoring of O&M Activities and Irrigation Fee Collection Construct Garrit's ^{Garrit's} Crane (motorized) to control Steel Gates and Stop Logs Overhaul of Main Pump Overhead Crane needs General servicing Replace Unit with the latest model For Replacement Replacement of all Auxiliary Pippings For Replacement Conduct IA Capability Training Conduct regular NIA-IA dialogues and Meetings Negotiate Contract Signing with IA's for Operation and Maintenance Works Conduct regular turn-out meetings (400 turn-outs) Provide IA Office and warehouse and Post Harvest Facilities and motorcycles a. 13 IA Office b. 13 warehouse and post harvest equipment c. 13 motorcycles			1,380,000.00 121,381,692.00
	Sub-Total GRAND-TOTAL			

Approved by:

VICENTE GALVEZ, CESOV
Regional Irrigation Manager

Submitted by:

HECTOR P. CARDENAS
Irrigation Superintendent I

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ANNEX-4 : JAPAN'S GRANT AID SCHEME

1. Grant Aid Procedure

1) Japan's Grant Aid Program is executed through the following procedures.

Application (Request made by a recipient country)

Study (Basic Design Study conducted by JICA)

Appraisal & Approval (Appraisal by the Government of Japan and Approval by Cabinet)

Determination of (The Notes exchanged between the Governments of Japan

Implementation and the recipient country)

2) Firstly, the application or request for a Grant Aid project submitted by a recipient country is examined by the Government of Japan (the Ministry of Foreign Affairs) to determine whether or not it is eligible for Grant Aid. If the request is deemed appropriate, the Government of Japan assigns JICA to conduct a study on the request. If necessary, JICA send a Preliminary Study Team to the recipient country to confirm the contents of the request.

Secondly, JICA conducts the study (Basic Design Study), using Japanese consulting firms.

Thirdly, the Government of Japan appraises the project to see whether or not it is suitable for Japan's Grant Aid Programme, based on the Basic Design Study report prepared by JICA, and the results are then submitted to the Cabinet for approval.

Fourthly, the project, once approved by the Cabinet, becomes official with the Exchange of Notes signed by the Governments of Japan and the recipient country.

Finally, for the implementation of the project, JICA assists the recipient country in such matters as preparing tenders, contracts and so on.

2. Basic Design Study

1) Contents of the Study

The aim of the Basic Design Study (hereinafter referred to as "the Study"), conducted by JICA on a requested project (hereinafter referred to as "the Project"), is to provide a basic

document necessary for the appraisal of the Project by the Government of Japan. The contents of the Study are as follows:

- a) confirmation of the background, objectives and benefits of the Project and also institutional capacity of agencies concerned of the recipient country necessary for the Project's implementation;
- b) evaluation of the appropriateness of the Project to be implemented under the Grant Aid Scheme from the technical, social and economic points of view;
- c) confirmation of items agreed on by both parties concerning the basic concept of the Project;
- d) preparation of a basic design of the Project; and
- e) estimation of costs of the Project.

The contents of the original request are not necessarily approved in their initial form as the contents of the Grant Aid project. The Basic Design of the Project is confirmed considering the guidelines of Japan's Grant Aid Scheme.

The Government of Japan requests the Government of the recipient country to take whatever measures are necessary to ensure its self-reliance in the implementation of the Project. Such measures must be guaranteed even though they may fall outside of the jurisdiction of the organization in the recipient country actually implementing the Project. Therefore, the implementation of the Project is confirmed by all relevant organizations of the recipient country through the Minutes of Discussions.

2) Selection of Consultants

For the smooth implementation of the Study, JICA uses a consulting firm selected through its own procedure (competitive proposal). The selected firm participates the Study and prepares a report based upon the terms of reference set by JICA.

At the beginning of implementation after the Exchange of Notes, for the services of the Detailed Design and Construction Supervision of the Project, JICA recommends the same consulting firm which participated in the Study to the recipient country, in order to maintain the technical consistency between the Basic Design and Detailed Design as well as to avoid any undue delay caused by the selection of a new consulting firm.

3. Japan's Grant Aid Scheme

1) What is Grant Aid?
The Grant Aid Program provides a recipient country with non-reimbursable funds to procure the facilities, equipment and services (engineering services and transportation of the products, etc.) for economic and social development of the country under principles in accordance with the relevant laws and regulations of Japan. Grant Aid is not supplied through the donation of materials as such.

2) Exchange of Notes (E/N)
Japan's Grant Aid is extended in accordance with the Notes exchanged by the two Governments concerned, in which the objectives of the project, period of execution, conditions and amount of the Grant Aid, etc., are confirmed.

3) "The period of the Grant" means the one fiscal year which the Cabinet approves the project for. Within the fiscal year, all procedure such as exchanging of the Notes, concluding contracts with consulting firms and contractors and final payment to them must be completed.

However, in case of delays in delivery, installation or construction due to unforeseen factors such as weather, the period of the Grant Aid can be further extended for a maximum of one fiscal year at most by mutual agreement between the two Governments.

4) Under the Grant, in principle, Japanese products and services including transport or those of the recipient country are to be purchased.

When the two Governments deem it necessary, the Grant Aid may be used for the purchase of the products or services of a third country.

However, the prime contractors, namely consulting, contracting and procurement firms, are limited to "Japanese nationals". (The term "Japanese nationals" means persons of Japanese nationality or Japanese corporations controlled by persons of Japanese nationality.)

5) Necessity of "Verification"

The Government of the recipient country or its designated authority will conclude contracts denominated in Japanese yen with Japanese nationals. Those contracts shall be verified by the Government of Japan. This "Verification" is deemed necessary to secure accountability of Japanese taxpayers.

- 6) Undertakings required to the Government of the recipient country
- a) to secure a lot of land necessary for the construction of the Project and to clear the site;
 - b) to provide facilities for distribution of electricity, water supply and drainage and other incidental facilities outside the site;
 - c) to ensure prompt unloading and customs clearance at ports of disembarkation in the recipient country and internal transportation therein of the products purchased under the Grant Aid;
 - d) to exempt Japanese nationals from customs duties, internal taxes and fiscal levies which may be imposed in the recipient country with respect to the supply of the products and services under the verified contracts;
 - e) to accord Japanese nationals whose services may be required in connection with the supply of the products and services under the verified contracts such as facilities as may be necessary for their entry into the recipient country and stay therein for the performance of their work;
 - f) to ensure that the facilities constructed and products purchased under the Grant Aid be maintained and used properly and effectively for the Project; and
 - g) to bear all the expenses, other than those covered by the Grant Aid, necessary for the Project.

7) "Proper Use"

The recipient country is required to maintain and use the facilities constructed and equipment purchased under the Grant Aid properly and effectively and to assign the necessary staff for operation and maintenance of them as well as to bear all the expenses other than those covered by the Grant Aid.

8) "Re-export"

The products purchased under the Grant Aid shall not be re-exported from the recipient country.

9) Banking Arrangement (B/A)

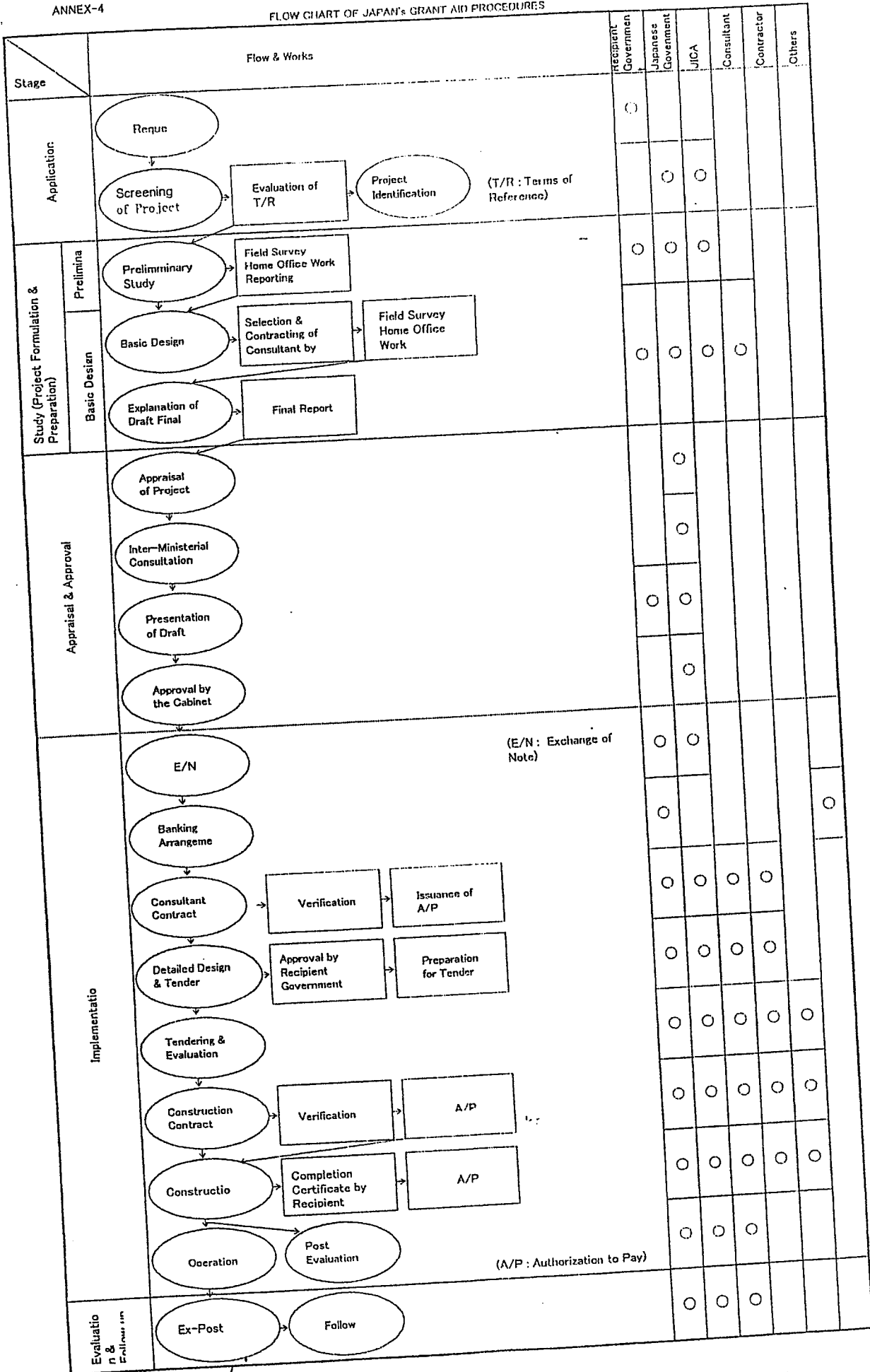
- a) The Government of the recipient country or its designated authority should open an account in the name of the Government of the recipient country in an authorized foreign exchange bank in Japan (hereinafter referred to as "the Bank"). The Government of Japan will execute the Grant Aid by making payments in Japanese yen to cover the obligations incurred by the Government of the recipient country or its designated authority under the verified contracts.

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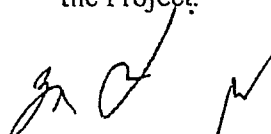
- b) The payments will be made when payment requests are presented by the Bank to the Government of Japan under an Authorization to Pay (A/P) issued by the Government of recipient country or its designated authority.





ANNEX-5: UNDERTAKINGS BY THE GOVERNMENT OF THE RECIPIENT COUNTRY

1. To secure a lot of land necessary for the Project;
2. To clear and level the site for the Project prior to the commencement of the construction;
3. To provide a proper access road to the Project site;
4. To provide facilities for distribution of electricity, water supply, telephone trunk line and drainage and other incidental facilities outside the site;
5. To undertake incidental outdoor works, such as gardening, fencing, exterior lighting, and other incidental facilities in and around the Project site, if necessary;
6. To ensure prompt unloading and customs clearance of the products purchased under the Japan's Grant Aid at ports of disembarkation in the Recipient Country;
7. To exempt Japanese nationals from customs duties, internal taxes and fiscal levies which may be imposed in THE RECIPIENT COUNTRY with respect to the supply of the products and services under the verified contracts;
8. To accord Japanese nationals whose services may be required in connection with the supply of the products and services under the verified contracts such facilities as may be necessary for their entry into THE RECIPIENT COUNTRY and stay therein for the performance of their work;
9. To bear commissions, namely advising commissions of an Authorization to Pay (A/P) and payment commissions, to the Japanese foreign exchange bank for the banking services based upon the Banking Arrangement (B/A);
10. To provide necessary permissions, licenses, and other authorization for implementing the Project, if necessary;
11. To ensure that the facilities constructed and equipment purchased under the Japan's Grant Aid be maintained and used properly and effectively for the Project; and
12. To bear all the expenses, other than those covered by the Japan's Grant Aid, necessary for the Project.



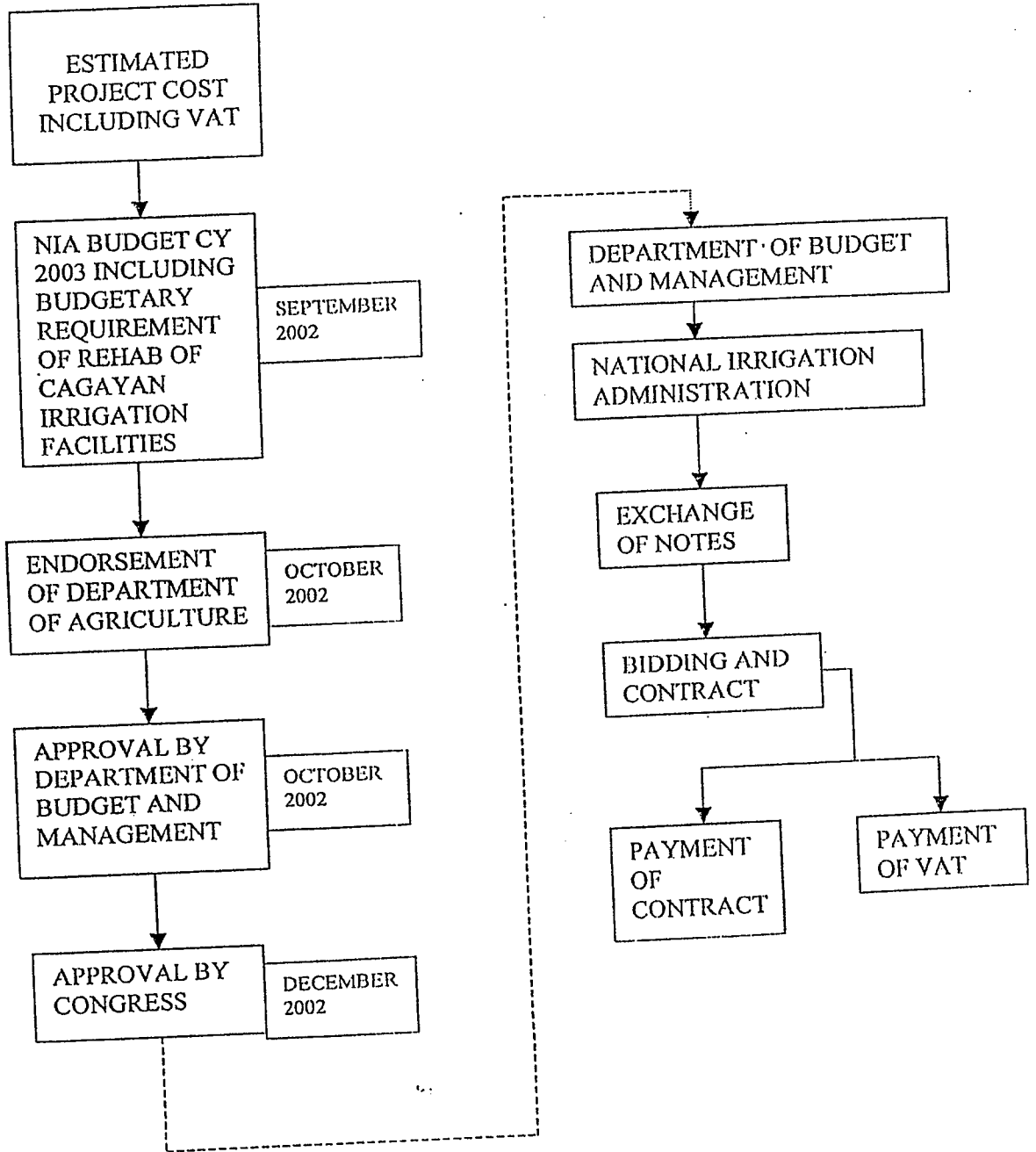
Major Undertakings to be taken by Each Government

Annex-5

No.	Items	To be covered by Grant Aid	To be covered by Recipient Side
1	To secure land		●
2	To clear level and reclaim the site when needed		●
3	To construct gates and fences in and around the site	●	
4	To construct the parking lot		
5	To construct roads	●	
	1) Within the site		●
	2) Outside the site	●	
6	To construct the building		
7	To provide facilities for the distribution of electricity, water supply, drainage and other incidental facilities		
	1) Electricity		●
	a) The distributing line to the site	●	
	b) The drop wiring and internal wiring within the site	●	
	c) The main circuit breaker and transformer		
	2) Water Supply		●
	a) The city water distribution main to the site	●	
	b) The supply system within the site (receiving and elevated tanks)		
	3) Drainage		●
	a) The city drainage main (for storm sewer and others to the site)	●	
	b) The drainage system (for toilet sewer, ordinary waste, storm drainage and others) within the site		
	4) Gas Supply		●
	a) The city gas main to the site	●	
	b) The gas supply system within the site		
	5) Telephone System		●
	a) The telephone trunk line to the main distribution frame/panel (MDF) of the building	●	
	b) The MDF and the extension after the frame/panel		
	6) Furniture and Equipment		●
	a) General furniture	●	
	b) Project equipment		
8	To bear the following commissions to the Japanese foreign exchange banking services based upon the B/A		●
	1) Advising commission of A/P		●
	2) Payment commission		
9	To ensure unloading and customs clearance at port of disembarkation in recipient country	●	
	1) Marine (Air) transportation of the products from Japan to the recipient country		●
	2) Tax exemption and custom clearance of the products at the port of disembarkation		●
	3) Internal transportation from the port of disembarkation to the project site		●
10	To accord Japanese nationals whose services may be required in connection with the supply of the products and the services under the verified contract such facilities as may be necessary for their entry into the recipient country and stay therein for the performance of their work		●
11	To exempt Japanese nationals from customs duties, internal taxes and other fiscal levies which may be imposed in the recipient country with respect to the supply of the products and services under the verified contracts		●
12	To maintain and use properly and effectively the facilities contracted and equipment provided under the Grant		●
13	To bear all the expenses, other than those to be borne by the Grant, necessary for construction of the facilities as well as for the transportation and installation of the equipment		●

Signature

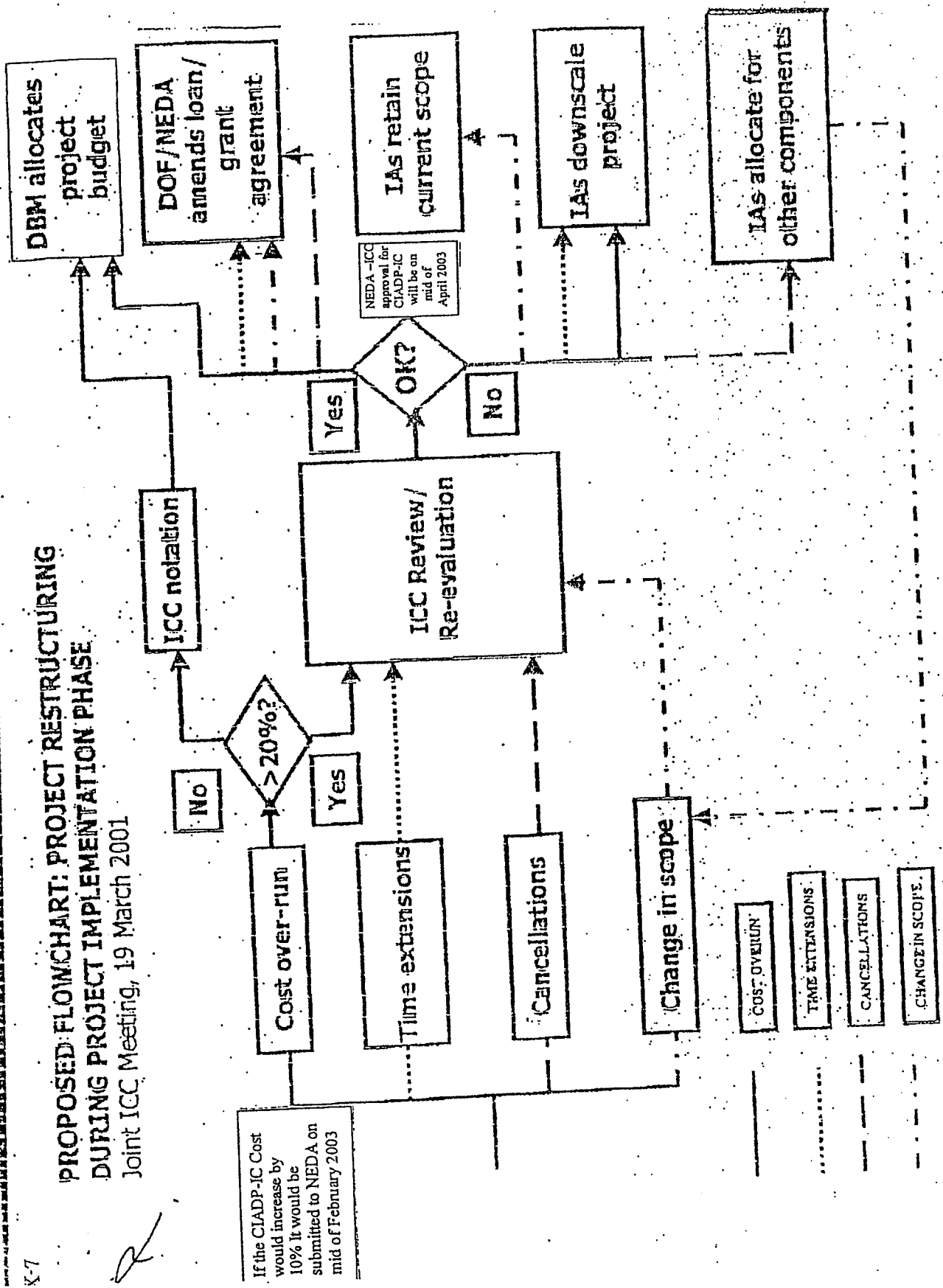
VAT FLOW CHART



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PROPOSED FLOWCHART: PROJECT RESTRUCTURING DURING PROJECT IMPLEMENTATION PHASE

Joint ICC Meeting, 19 March 2001



(2) 基本設計概要説明時

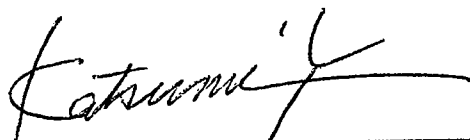
MINUTES OF DISCUSSIONS
ON
THE BASIC DESIGN STUDY
ON THE PROJECT FOR
REHABILITATION OF
CAGAYAN IRRIGATION FACILITIES
IN
THE REPUBLIC OF THE PHILIPPINES
(EXPLANATION ON DRAFT REPORT)

In October 2002, the Japan International Cooperation Agency (hereinafter referred to as "JICA") dispatched the Basic Design Study Team on the Project for Rehabilitation of Cagayan Irrigation Facilities (hereinafter referred to as "the Project"), and through discussion, field survey, and technical examination of the results in Japan, JICA prepared draft report of the Study.

In order to explain and to consult the Philippine side, represented by National Irrigation Administration (hereinafter referred to as "NIA"), Department of Agriculture, the Republic of the Philippines (hereinafter referred to as "Philippines"), on the components of the draft report, JICA sent to Philippines the Draft Report Explanation Team (hereinafter referred to as "the Team"), which is headed by Mr. Katsumi YOSHIDA, Director, Forth Project Management Division, Grant Aid Management Department, JICA, from 26 February to 4 March, 2003.

As a result of discussions, both parties confirmed the main items described on the attached sheets.

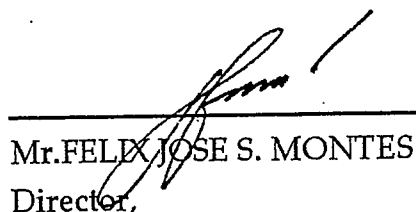
Manila, 3 March, 2003



Mr. KATSUMI YOSHIDA
Leader
Basic Design Study Team
Japan International Cooperation Agency



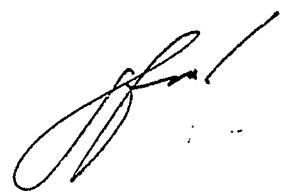
Mr. JESUS EMMANUEL M. PARAS
Administrator
National Irrigation Administration



Mr. FELIX JOSE S. MONTES
Director,
Project Development Services,
Department of Agriculture

implementation and to secure the budget with respect to the payment carried out for and income accruing from the supply of the products and services under verified contract. NIA will incorporate in their budget for the VAT under the locally-funded projects. NIA likewise shall be responsible in coordinating with Department of Budget and Management (DBM) for release of the VAT payment.

- 5-4. The Philippine side understands that NIA would take the necessary measures with close collaboration with relevant agencies immediately to prepare and deliver the requirement for Investment Coordination Committee (ICC). NIA will inform the schedule ICC reviewing to JICA Philippine Office immediately after consultation among relevant agencies, and its progress in the meantime.
- 5-5. The Philippine side shall secure the necessary budget and personnel to operate and maintain the facilities and equipment of the Project on the basis of the plan described in the draft report.



ATTACHMENT

1. Components of the Draft Report

The Philippine side agreed and accepted in principle the components of the draft report explained by the Team. Moreover, the Philippine side accepted the exclusion of the following major components from the scope of the Project ;

- (1) Construction of settling basin at the outlet of main canal in the 3 Irrigation Systems(Iguigu, Amulung and Magapit),
- (2) Concrete lining in Magapit Irrigation System, and
- (3) Institutional Irrigators Associations(LA) Strengthening Works in the 3 Irrigation Systems.

2. Reconfirmation of the previous Minutes of Discussions

Both sides reconfirmed validity of all the contents in the previous Minutes of Discussions signed on 16 October, 2002, during the Basic Design Study.

3. Japan's Grant Aid Scheme

The Philippine side understood the Japan's Grant Aid Scheme explained by the team and will take the necessary measures, described in the Annex-4 and 5 of the Minutes of Discussions signed on 16 October, 2002.

4. Schedule of the Study

JICA will complete the final report in accordance with the confirmed items and send it to the Government of the Philippines by April, 2003.

5. Other Relevant Issues

5-1. The Philippine side agreed that the following items should be taken in order to improve Cagayan Integrated Irrigation System appropriately;

- 1) to improve and implement the rational water management program, and
- 2) to formulate and implement the operation and maintenance plan of the facilities.

Moreover, NIA shall strengthen the IAs with the reference to "the Study on the Irrigation Association Strengthening Project in National Irrigation Systems.

5-2. The team emphasized it is critical to ensure safety for personnel concerning the Project during its implementation. The Philippine side fully agreed with and shall take necessary measures to ensure their safety by effective coordination with the concerned government agencies.

5-3. NIA, Department of Agriculture is responsible for the arrangement of the Value-Added Tax (VAT) imposed on Japanese Nationals with respect to the project