

フィリピン共和国

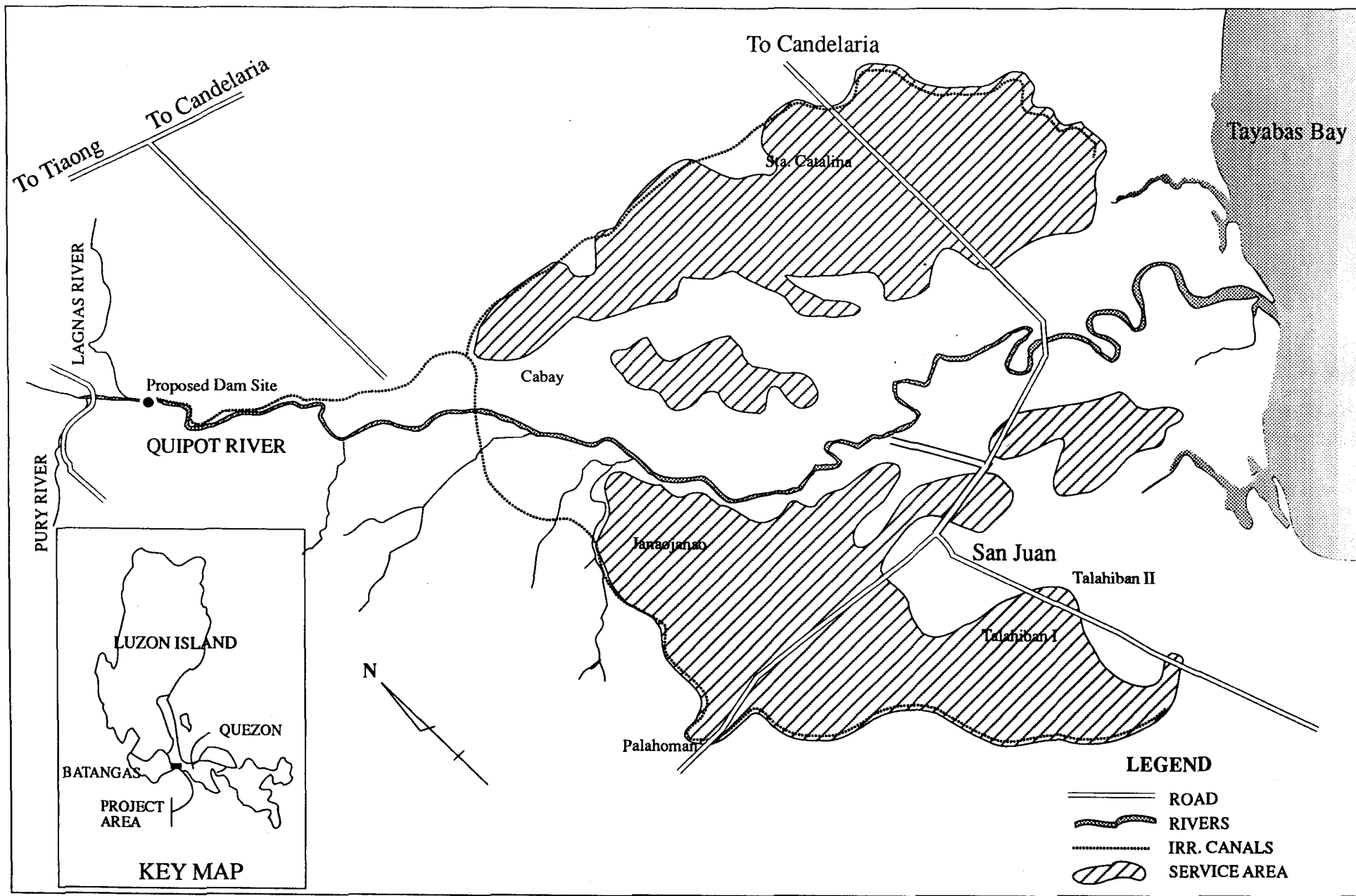
全国農業研究情報整備計画  
全国農産加工業振興計画  
キポット川水源転換事業

事前調査報告書



平成2年11月

社団法人 海外農業開発コンサルタント協会  
日本工営株式会社



## 要約

国名 : フィリピン共和国  
案件名 : 全国農業研究情報整備計画  
(Agricultural Research and Management Information System)  
全国農産加工業振興計画  
(Agri-Based Industry Development Program)  
キポット川水源転換事業  
(Quipot River Irrigation Project)  
相手国担当機関 : 農業省(Department of Agriculture ; DA)  
国家灌漑庁(National Irrigation Administration ; NIA)

### 1. 事業の背景

フィリピン政府は、中期国家開発計画(1987-1992)における農業部門の重要目標として、食糧自給の早期達成及び農村振興による雇用の促進、農村部における生活レベルの向上をかかげている。これらの目標達成のために、灌漑開発、農村部における各種事業の推進は不可欠である。

### 2. 事業の概要

#### (1) 全国農業研究情報整備計画

本計画は、農業省内及びその他の各機関に蓄積された膨大な農業関係統計資料及び研究情報をデータベースとして整備し、コンピューターネットワークを構築することによって各所からの情報の利用/更新を促し、農業政策の決定から市場の把握、研究成果の実務への応用といったさまざまなレベルにおける情報の利用を計るものである。

#### (2) 全国農産加工業振興計画

本計画は、農村部における雇用機会の創出、農村部と都市部における所得格差の是正及び、農産物加工業の単一構造改善のため、農村部における特産物を利用した農産加工業を振興し、農村地域の振興と新たな輸出農産物の創出を行なうものである。

#### (3) キポット川水源転換事業

計画地域であるキポット川河口付近においては、現在浅井戸及び小規模灌漑システムによる灌漑が行なわれているが、ポンプの運営費の上昇、施設の老朽化及び不十分かつ不安定な水源により灌漑効率は低く、農業生産性は低い。

本計画は、これらの浅井戸/小規模灌漑の水源としてキポット川に取水

工を設け、合計3,000haの灌漑を実施するものである。これにより、計画地域の作付率は200%となり、地域内における農業生産の増加、農村地域の振興及び雇用の推進が実現されることとなる。計画施設の概要は、以下に示すとおりである。

取水堰：	重力式コンクリート	H = 4.5m	L = 110m
取水量：	毎秒5.3m <sup>3</sup>		
用排水路：	Main Canal;	23km	
	Lateral & Sub-Lateral Canal;	61km	
	Farm Ditches;	60m / ha	
	Project Level Drainage;	自然排水路の改良による	
	Farm Level Drainage;	50m / ha	
	Turn Out etc.;	1 unit / 50ha	

### 3. 協力への展望

- (1) 全国農業研究情報整備計画  
フィージビリティ調査、期間：約9カ月
- (2) 全国農産加工業振興計画  
マスタープラン調査、期間：約21カ月
- (3) キポット川水源転換事業  
フィージビリティ調査、期間：約10カ月

# 目 次

位置図	
要約	
1. 序言	1
2. 一般背景	2
2. 1 フィリピン共和国の概要	2
2. 2 国家計画	3
2. 3 農業政策	3
3. 全国農業研究情報整備計画	5
3. 1 計画の背景	5
3. 2 計画の目的	5
3. 3 計画の概要	6
4. 全国農産加工業振興計画	7
4. 1 計画の背景	7
4. 2 計画の目的	8
4. 3 計画理念及び概要	8
5. キポット川水源転換事業	9
5. 1 計画の背景	9
5. 2 計画地区の概要	9
5. 3 計画の目的	10
5. 4 計画の概要	11
添付資料	
資料—1 調査実施工程表	
資料—2 面会者リスト	
資料—3 現地写真集（キポット川水源転換事業）	
資料—4 全国農業研究情報整備計画	DRAFT AID PROPOSAL
資料—5 全国農産加工業振興計画	DRAFT AID PROPOSAL
資料—6 キポット川水源転換事業	DRAFT AID PROPOSAL

## 1. 序言

本報告書は、平成2年10月21日から30日までの10日間にわたってフィリピン共和国において実施した、以下に示す3件の事前調査結果をとりまとめたものである。

- a. 全国農業研究情報整備計画
- b. 全国農産加工業振興計画
- c. キポット川水源転換事業

調査は、社団法人海外農業開発コンサルタント協会(ADCA)から派遣された下記3名の団員により実施された。

団長	：山崎 隆可	日本工営株式会社
灌漑／排水	：村本 俊一	日本工営株式会社
灌漑／排水	：黒崎 靖介	日本工営株式会社

調査団は、フィリピン国内における現地調査及び資料収集等において、フィリピン共和国農業省、灌漑庁を始めとする同国政府関係者の協力を得て、業務を円滑に遂行することができた。また、国内においては農林水産省構造改善局設計課海外土地改良技術室から、また現地においては在フィリピン日本大使館、JICA専門家の方々から多大な助言と協力を頂いた。ここに関係各位の方々には深甚なる感謝の意を表する次第である。

調査団の調査日程、面談者は、添付資料-1、2に示すとおりである。

## 2. 一般背景

### 2.1 フィリピン共和国の概要

#### (1) 国土・気候

フィリピン共和国は約7,000の島々よりなり、その総面積は約30万km<sup>2</sup>で、最も大きい2島、すなわちルソン島とミンダナオ島でその2/3を占めている。また、平地は国土全体の約35%である。フィリピンは四方を海に囲まれ、かつ海が群島内に入り込んでいるために高温多湿であり、国全体の年平均気温は27℃、年平均降水量は2,500mmである。

#### (2) 人口

1989年現在における総人口は約6,010万人と推定されており、人口密度は約200人/km<sup>2</sup>である。また、最近10年間における平均人口増加率は2.5%/年である。15才以上の就労可能人口は総人口の61.6%に相当する3,587万人と推定されるが、実質雇用は就労可能人口の65%、約2,350万人に留まっている。失業率は年々上昇し、1987-1988年には1975年以来最高となっている。2000年における総人口は7,520万人と見積られており、新たな雇用機会の創出は政府にとって緊急の課題である。

#### (3) 社会経済

フィリピンの経済成長率は他のアジア中所得国より低く推移している。フィリピン政府は当初、1982年～1987年の5年間のGNP伸び率を年平均7.6%と予測したが、実績はこれを下回り1983年における成長率は過去20年間で最低を記録した。以後2年間、経済状態は引き続き悪化し、1986年には全国民の2/3が貧困レベル以下の生活を強いられ、対外債務は264億ドルに達した。その後、政府の所得消費拡大政策、税制の見直し等による個人消費拡大により経済は若干回復の兆しを見せ、1988年にはGNPは8,238億ペソとなり、過去最高であった1983年レベルを5年ぶりに上回った。また一人当たりGNPは14,028ペソ(583 US \$)となったが、これは依然として実質的には1983年レベル以下にある。

1988年における各産業別の生産状況は、下表に示すとおりである。

経済セクター	GDP (百万ペソ)	比率 (%)
第一次産業	189,988	23.0
第二次産業	277,175	33.5
第三次産業	359,586	43.5
合計	826,749	100.0

#### (4) 農業

農業はGDPの約17%を生産し、輸出額上位10品目のうち7品目を占め、総実労働力の46%を雇用する実質上の基幹産業である。1988年における耕地面積は13,388百万ha、総生産額は1,100億ペソである。品目別の農産物生産量及び生産額は下表に示すとおりである。

品目	生産量		生産額	
	(10 <sup>9</sup> t)	(%)	(10 <sup>6</sup> ペソ)	(%)
米	8,971	20.5	26,122	23.7
コーン	4,428	10.1	12,177	11.1
ココナッツ	10,800	24.6	13,861	12.6
砂糖キビ	1,883	4.3	10,000	9.1
コーヒー	141	0.3	3,723	3.4
果物、ナッツ	8,538	19.5	22,956	20.8
野菜	8,632	19.7	17,709	16.1
その他	457	1.0	3,608	3.3
合計	43,848	100.0	110,156	100.0

1980年との比較では、農産物の総生産量は特に砂糖きびの生産縮小に伴って約7%の減少を見せているが、穀類の生産は約25%の増加となっている。しかし、総人口の増加に伴い、人口一人当たりの穀類生産量はほとんど変化していない。また、米の生産性は近年伸び悩み、ha当たり2.6t程度となっている。

#### 2.2 国家計画

フィリピン政府は現在、1987年～1992年を実施期間とする国家開発中期計画を実施中である。中期計画による達成目標は以下に示すとおりである。

- ・ 貧困の撲滅
- ・ 雇用機会の創出
- ・ 社会正義の推進
- ・ 継続的経済成長の達成

#### 2.3 農業政策

フィリピン政府の経済部門における最重要課題は、経済成長の基盤となる農業部門の生産を高めることである。人口の増加に伴う農業生産物に対する需要は拡大を続けており、食糧自給の達成には農地の拡大、生産性の向上が強く望まれている。こういった農業の重要性にもかかわらず、農村部における所得、生活レベルは低く、都市部と農村部の格差は拡大の一途を辿っている。

このような状況に鑑み、政府は中期国家開発計画の中で、農業部門の活性化を計る具体的な目標として以下の達成をうたっている。



- ・小規模農家の所得向上
- ・生産性向上の維持
- ・所得の公平な分配
- ・食糧自給の達成
- ・農村地域における、特に土地なし農民に対する雇用機会の創出
- ・収穫／生産物、投入資材の配送システム、供給の改良
- ・農民の事業参加の制度化

また、上記目標達成のための手段として、以下を示している。

- ・生産制度の強化。具体的には土地の有効利用、作物の多様化、投入資材の価格引き下げ、農業技術の向上、適切な管理及び土地、水資源の保全
- ・市場の強化。具体的には生産物価格の安定、地方市場の確立、市場の発展及び組織化の促進、貿易における農業政策の採択
- ・農民支援サービス、施設の強化。具体的には貸付利用の簡略化、研究開発・情報提供その他の支援サービスの向上、産業の振興、農業リスクの低減及び農民組織の強化

### 3. 全国農業研究情報整備計画 (Agricultural Research and Management Information System)

#### 3.1 計画の背景

第2章 "一般背景" において述べたとおり、農業開発の中期的な目標は、農業部門の公平、効率的かつ自然環境に対して無理のない継続的發展であり、農業生産の目標達成のみならず、零細農家の収入の向上を目指すものである。すなわち、主食の自給、農業の多様化といった目的はそれぞれ調和を持って推進されるべきである。こういった調和のとれた開発を行なうための政策及び制度を設け、インフラ整備、研究及び技術開発といった部門に対する必要な投資、奨励を行なうことが、政府に課せられた役割であるといえよう。

農業省(Department of Agriculture ; DA)の職務は、まず国内における農業の振興にある。受益者が自由に利用できる農業研究情報の公開はその手段の一つであり、農業研究情報の平等な公開には、研究情報整備システムの構築が最も合理的である。また、こういったシステムを農業省のもつ農業関連データと組み合わせることにより、データ解析に基づいた政策決定を行なうことが可能となる。農村部に対する情報サービスの拡大により、最終的には農業生産の増大、農村地域における雇用の拡大、農業生産物価格の安定、栄養状態の改善及び輸出の拡大、輸入品の保管に寄与するであろう。

上記のような目標達成の手段として、農業の変化ならびに技術の進歩に連動して変化する研究計画に応じた適切な農業研究、管理情報公開システムの整備が必要となる。こういった必要性に応じて、1987年に農業研究局(Bureau of Agricultural Research ; BAR)が組織され、以来農業省内における研究管理の強化と合理化にあたっている。

BARの重要な業務として、コンピューター化された農業関係の管理情報システムの構築があるが、BARはこれに必要な機材を有していない。また、農業統計局(Bureau of Agricultural Statistics ; BAS)においても、蓄積された膨大な統計データを十分に整理／活用できていないのが現状である。

#### 3.2 計画の目的

本計画は、農業省本省内の各機関、出先機関及びその他の省庁、研究機関等に分散している統計情報、農業研究情報を農業省のデータベースに統括し、正確かつ迅速な情報の把握・提供を目的とするものである。このデータの公開にあたっては、農業政策の決定といった国家レベルから市場把握といった民間レベル、研究機関における利用、新しい農業研究成果の応用といった実務レベルに至るさまざまなレベルでの利用を前提とし、各段階における農業の振興に役立てるものである。

### 3.3 計画の概要

- a. 研究情報及び統計データを提供するコンピューターネットワークの構築。  
このネットワークは、農業省及び広く一般に向けてに農業に関する正確かつ迅速な情報提供を行なう。
- b. 農業省の出先機関及びその他の機関に対する、研究活動のモニタリングシステムの確立。
- c. 農業省のインフォメーションセンターと各大学、国内及び各国の研究機関との関係の演出。
- d. 利用者の形態に合わせた研究成果の伝達。
- e. 関連諸機関の研究／統計関連活動へのサポート。
- f. 農業研究に関連したセミナー、シンポジウム、会議等の開催。
- g. 研究／統計情報交換のための教育訓練の実施。
- h. 農業研究成果の公開ならびに農民に対する生産／市場情報の提供のための印刷物の発行。
- i. ARMIS維持のためのBAR及びBAS職員の能力向上。

#### 4. 全国農産加工業振興計画 (Agro-Based Industry Development Program ; AIDP)

##### 4.1 計画の背景

###### (1) 農村部における貧困問題

第2章 "一般背景" において述べたとおり、農業はフィリピンの実質上の基幹産業であるにもかかわらず農村地域は貧困状態におかれており、都市部と農村部の格差は拡大する一方である。1988年においては、農村部の人口の67%が公称貧困ラインである月収2,061ペソ（約80 US\$）以下におかれている。また、都市部家庭の平均収入に対する農村部家庭の平均収入の割合は、1975年における0.67から1988年においては0.47に低下しており、近年においては80%以上の農家が収入において下位30%の階層に位置している。一人当たりの農業生産も1980年代においては1970年代より低下しており、いま現在も停滞したままである。

こういった農村地域の貧困及び農業生産性の低さは、これまでの農村社会の発達を妨げてきた数々の障害の当然の結果として生じた現象である。これらの障害とは、a.小農家が土地、資金、肥料及び政府／民間による補助といった生産要素にあまり縁がなかったこと、b.農家、漁家に対する不十分な政府補助、c.過去における、都市部／工業偏重の政策、d.人口の爆発的な増加と天然資源の無差別な開発などである。また、農村部の経済衰退にともなう失業者の都市流入は、都市部における貧困層の形成という新たな社会問題を引き起こしている。

上記のような問題に対処するために、政府は2.3節に述べた中期国家開発計画中の農業政策を打ち出し、農村地域の活性化及び農村部と都市部の格差是正を中期計画の重要目標としている。

###### (2) 輸出加工産業の構造改革

フィリピンにおける農産加工業として、古くからココナッツ及び砂糖の栽培／生産が行なわれており、国内の重要な産業となってきた。これらの生産物は輸出に大きな割合を占め、農村地域における加工は地方経済の活性化に大きく貢献してきた。しかし、ココナッツオイル及び砂糖の国際価格の下落に伴って、両者に過度に依存してきたフィリピン輸出経済は大きな打撃を受け、農産加工業を単一構造から多様化に変革する必要性に迫られている。

###### (3) CARP受益者の自立

総合農地改革制度(Comprehensive Agrarian Reform Program ; CARP)の実施下において、CARPによって小作農となった受益農民は、生産物の販売を自らの手

で行なわなければならない。市場や価格の変動に対して非力な小規模農民の保護には、農産物価格の安定と市場の確保が必須である。このため、農業省 (Department of Agriculture ; DAR)は、これらの受益農民に対する事業主としての初歩的な技術の移転を行なうと同時に、これらの受益農民の自立達成のための市場確保、価格安定の施策を行なう必要がある。

上記3つの背景により、地域特産物の加工による、農村部における農産加工業振興の必要性が浮上してきた。

#### 4.2 計画の目的

本計画は、農村部及び都市部における貧困問題の解決策として農村地域における地方特産物の加工業を振興し、さらには4.1節に述べた農業政策の実現を目標とするものである。

農村地域における農産加工業は農村地域における所得を増加させ、農村地域における雇用機会を創出し、余剰労働力を吸収することとなる。また、農産加工の原料生産によって農業部門は生産地近隣において安定した生産物価格と市場を得る。この市場を維持することは生産基盤への新たな投資を産み出すこととなり、農業部門全体の振興へとつながると考えられる。

#### 4.3 計画理念及び概要

本計画においては、以下の農産加工業振興理念／方策を実施する。

- a. 既存の自然、経済力及び労働力の効率的な活用
- b. 開発重点地区の設定
- c. 農産加工業の奨励／優遇策の実施
- d. 農産加工業者をサポートするインフラ等への施設投資
- e. 支援サービスとしての下記の政府援助
  - ・ 地域特有の、かつ所得向上を目指した農産加工技術の研究及び開発
  - ・ 農村労働力に対する新しい生産技術の普及促進
  - ・ 潜在的投資家に対する奨励金の支給
  - ・ 国内流通及び輸出市場に対するサポート

また、農産加工業者としては以下の種類が考えられるが、計画においては、このいずれに対しても必要な助力を行なう予定である。

- a. CARP受益者を含む農民共同組合による小規模加工業
- b. CARPによる影響を受けた大地主等の地方投資家及び国外労働者による中小規模加工業
- c. 全国規模及び海外からの投資家による大規模加工業

## 5. キポット川水源転換事業 (Quipot River Irrigation Project)

### 5.1 計画の背景

2.3節において述べた中期国家開発計画(1987-1992)における農業政策に基づき、国家灌漑庁(National Irrigation Authority; NIA)では1990年～2000年の総合計画の中で、人口増加に対応した米の増産には、灌漑プロジェクトの新規開発及び改修を中心として対応するという方針を示している。この計画では、今後10年間に灌漑プロジェクトの新規開発530,000ha及び改修1,103,000haを予定している。NIAによる灌漑プロジェクトは、1,000ha以上の大規模灌漑プロジェクト(National Irrigation System; NIS)及び1,000ha未満の小規模プロジェクト(Communal Irrigation System; CIS)の2種に大別され、上記の総合計画では、2000年までにNIS 289,000ha、CIS 241,000haの開発を予定している。

本計画は、上に述べた新規プロジェクトの中でも重要度、計画熟度の高いものとして高い優先順位を与えられ、NIAによる予備調査及び1/4,000地形図作成がほぼ終了している。また、近年における燃料費等のポンプオペレーション費用の上昇により、ポンプ灌漑を重力式に転換する本計画は、さらに重要度を増しつつある。

### 5.2 計画地区の概要

#### (1) 計画地区の概況

計画地区はマニラ南東約120kmの、ケソン州及びバタンガス州境界のキポット(Quipot)川(又はMalaguing川)下流海岸部に位置する、ケソン州のサンファン(San Juan)を中心とする地域であり、首都マニラからはコンクリート舗装された道路を通過して車で約2時間の距離にある。ケソン州の州都ルセナ(Lucena)とバタンガス州の州都バタンガス(Batangas)からは20～30kmのほぼ同距離にあるが、バタンガス側の道路状況は悪く、時間距離的にはルセナに近い。しかし、バタンガス側の道路も現在補修が進んでおり、バタンガスとのアクセスもかなり改善される見込である。

計画対象地区はケソン州のTiang及びCandelaria、バタンガス州のSan Juanの3地区にまたがり、キポット川の両岸の東西南北約15kmに広がる地域である。計画地区の標高は3～23m程度、地形勾配は平均0.05%程度と平坦であり、この中をキポット川及びいくつもの小河川が流れている。

#### (2) 気候

計画地域の気候はフィリピンにおいて2型と呼ばれる気候であり、明確な乾季をもたず、11月から1月にかけて雨の多い気候である。年平均気温は27℃で

あり、年間を通じて月平均気温の変動は3℃程度である。近隣のルセナにおいて観測された年間降水量は981mm(1968)から3,536mm(1971)、平均は2,200mmであり、このうち約半分が10月～1月の雨期に降っている。またしばしば発生する台風の被害とも無縁ではない。

また蒸発量は、近隣のロス・バニョス (Los Banos) における測定で年平均1885mmである。

### (3) 水文

本計画の水源となるキポット川は、バタンガス、ケソン及びラグナの3州界にあるマレプニョ山 (Mount Malepunyo; 951m)を源として、ほぼバタンガス、ケソンの州境を流下し、計画地域付近においてタヤバス湾 (Tayabas Bay)に注ぐ。計画取水地点における流域面積は461km<sup>2</sup>である。キポット川においては現在流量観測が行なわれていないが、近隣のDumaca-a川 (流域面積74km<sup>2</sup>) における流量観測結果からの推定では、年間流出量は1,337.4百万m<sup>2</sup>とされている (NIAによる試算)。NIA試算によるキポット川の流出量は、次表に示す通りである。

キポット川流出量 (計画取水地点、上段 ; 10<sup>6</sup>m<sup>3</sup>/10day、下段 ; m<sup>3</sup>/sec)

Jan.	Feb.	Mar.	Apr.	May.	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.	平均
49.2	26.2	24.8	17.7	21.1	25.6	26.8	28.0	29.2	59.7	66.2	67.9	36.9
56.9	30.4	28.7	20.5	24.4	29.6	31.1	32.4	33.8	69.1	76.6	78.6	42.7

### (4) 農業の概況

計画地域の主要作物はココナッツ及び米であり、土地利用はココナッツプランテーションと水田地域に大きく分けられる。既存水田面積は約3,000haであり、そのうち2,500haについては数多くの浅井戸及びいくつかの小河川の表流水による小規模灌漑 (Communal Irrigation System ; CIS) 施設が存在する。しかし、ポンプ施設の老朽化及び燃料費の高騰により多くのポンプが利用されておらず、また小河川の流量が不十分かつ不規則であることから、灌漑用水の不足による農業生産性の低下をきたしている。残りの約500haについては天水田であり、乾季作は行なわれていない。

## 5.3 計画の目的

本計画は、計画地域における灌漑排水の改善を中心とした農村総合開発を行なうことにより、中期国家開発計画に掲げられた以下の目標達成を目的とするものである。

- ・ 農業生産の増加及び安定化
- ・ 農村住民の生活レベルの向上
- ・ 雇用機会の創出

具体的には、計画地域内の水田3,000haに対して200%の作付け率を目標とし、

また農道等の農業基盤整備による農村環境の向上、及びこれらの波及効果による地域内における雇用機会の創出、計画地域内の農村住民の生活レベルの向上を目的とする。

#### 5.4 計画の概要

本計画は灌漑施設の改善方策として、計画地域内に数多く存在するポンプ／小規模かんがい施設を、キポット川を水源とする重力式灌漑施設に統合し、また低地部の排水改善を行なうことによって、雨期、特に台風の被害による低地部の冠水を防止する。以上の灌漑排水施設の改善により作付け率の向上及び農業生産の安定化を計るとともに、農道整備等を含めた農村総合開発を実施するものである。

灌漑用水は、計画地域上流のTiaongから約6km下流地点において取水され、約23kmのMain Canalをへて灌漑地域へと導かれる。

主要施設の概要は以下に示す通りである。

取水堰：	重力式コンクリート	H = 4.5m L = 110m
取水量：	毎秒5.3m <sup>3</sup>	
用排水路：	Main Canal;	23km
	Lateral & Sub-Lateral Canal;	61km
	Farm Ditches;	60m / ha
	Project Level Drainage;	自然排水路の改良による
	Farm Level Drainage;	50m / ha
	Turn Out etc.;	1 unit / 50ha



## 添付資料

- 資料一1 調査実施工程表
- 資料一2 面会者リスト
- 資料一3 現地写真集（キポット川水源転換事業）
- 資料一4 全国農業研究情報整備計画 DRAFT AID PROPOSAL
- 資料一5 全国農産加工業振興計画 DRAFT AID PROPOSAL
- 資料一6 キポット川水源転換事業 DRAFT AID PROPOSAL

資料-1 調査実施工程表

日 順	月日	曜 日	起点/ 経由地	滞在地	行 事
(山崎隆可)			(* は同一行動)		
1	10月21日	日	東京	マニラ	* 移動
2	10月22日	月		マニラ	* NIA訪問 * DA訪問
3	10月23日	火		マニラ	* NIA訪問 DA訪問/打ち合わせ * 日本大使館訪問
4	10月24日	水		マニラ	DA打ち合わせ
5	10月25日	木		マニラ	DA打ち合わせ/作業
6	10月26日	金		マニラ	DA打ち合わせ/作業
7	10月27日	土		マニラ	作業
8	10月28日	日		マニラ	作業
9	10月29日	月		マニラ	* NEDA訪問 DA訪問
10	10月30日	火	マニラ	東京	* 移動
(村本俊一/黒崎靖介)					
1	10月21日	日	東京	マニラ	* 移動
2	10月22日	月		マニラ	* NIA訪問 * DA訪問
3	10月23日	火		マニラ	* NIA訪問 * 日本大使館訪問 資料収集
4	10月24日	水	マニラ	現地	現地調査/資料収集
5	10月25日	木	現地	マニラ	現地調査/地方局訪問
6	10月26日	金		マニラ	NIA打ち合わせ/作業
7	10月27日	土		マニラ	作業
8	10月28日	日		マニラ	作業
9	10月29日	月		マニラ	* NEDA訪問 NIA訪問
10	10月30日	火	マニラ	東京	* 移動

資料-2 面談者リスト(1)

山崎隆可

日付	訪問機関	氏名	所属	役職
10月22日	NIA	Mr. I.R.Digal	Project Development Dept.	Manager
		Mr. W.D.Silva	Project Identificatrion Section	Chief
		Mr. F.M.Galit	Survey & Mapping Section	Chief
	NIA	大石専門家		
	DA	Ms. T.C.Capellan	IADCCO	Assistant Secretary
	DA	佐分利専門家		
10月23日	NIA	Mr. W.S.Tiangco		Assistant Administrator
	DA	Mr. A.C.Ugalino	Agribusiness Group	Assistant Secretary
		Ms. J.M.Kintana	Agribusiness Group	Supervising Agriculturist
		Ms. F.B.Macam	Agribusiness Group	Sr.Agronomist
Mr. N.F.Estoesta		IADCCO		
	日本大使館	林田書記官		
10月24日	DA	Ms. C.D.De Mesa Mr. F.D.Lansigan Ms. E.C.Mamarie	Information System Division Stastical Laboratory, Collage of Arts and Science,U.P. IADCCO	Division Chief
10月25日	DA	Ms. T.C.Capellan	IADCCO	Division Chief
		Ms. R.F.C.Alberto	Feasibility Study Division	
		Mr. N.F.Estiesta	Agribusiness Group	
		Ms. J.M.Kintana	Agribusiness Group	
	DA	Mr. M.M.Lantin Ms. C.D.De Mesa Ms. E.C.Mamarie	Research,Training and Extension Information System Division IADCCO	Assistant Secretary Division Chief
10月26日	DA	Ms. C.D.De Mesa Ms. E.C.Mamarie	Information System Division IADCCO	Division Chief
10月29日	NEDA	Ms. Adriano	Agric Division	Director
	DA	Mr. Dar	Bureau of Agrucultural Research	Director
		Mr. Malu	Bureau of Agrucultural Research	
		Mr. Jouy Corpuz	Bureau of Agrucultural Research	
Mr. Nick Eleazar		Bureau of Agrucultural Research		

DA : Department of Agriculture

NIA : National Irrigation Administration

IADCCO : International Agriculture Development Cooperation Coodinating Office

NEDA : National Economic Development Agency

U.P. : University of Philippines

資料-2 面談者リスト(2)

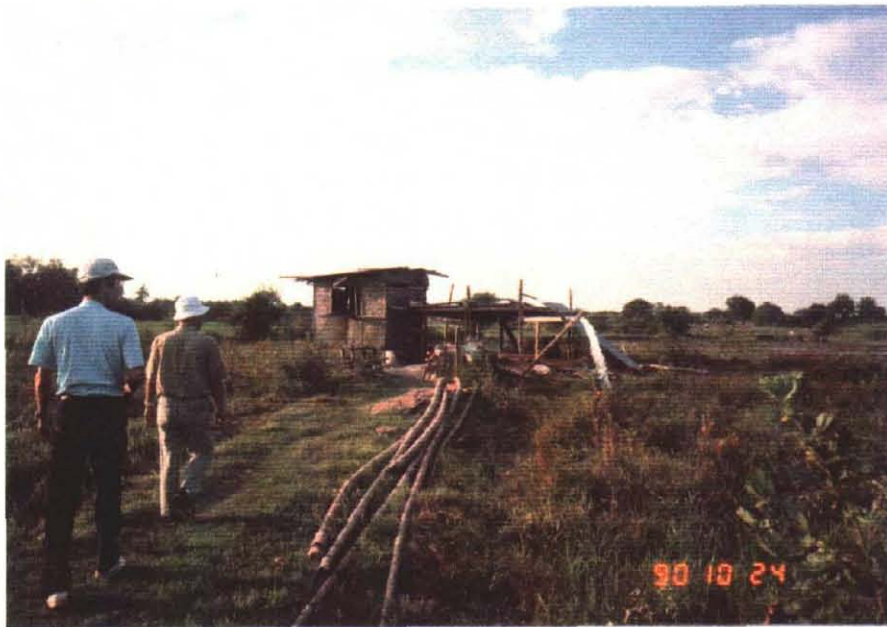
村本俊一／黒崎靖介

日付	訪問機関	氏名	所属	役職
10月22日	NIA	Mr. I.R.Digal	Project Development Dept.	Manager
		Mr. W.D.Silva	Project Identificatrion Section	Chief
		Mr. F.M.Galit	Survey & Mapping Section	Chief
	NIA	大石専門家		
	DA	Ms. T.C.Capellan	IADCCO	Assistant Secretary
	DA	佐分利専門家		
10月23日	NIA	Mr. W.S.Tiangco		Assistant Administrator
10月24日	PIO-Quezon	Ms. A.R.M.Esquieres	Engineering Section, PIO-Quezon	Section Chief
10月25日	RIO-Region IV	Mr. C.A.Gimpaya	RIO-Region IV	Director
		Ms. G.L.Hernandez	Construction Section, RIO-Region IV	Section Chief
		Mr. C.A.Gimpaya	RIO-Region IV	Director
		Mr. R.R.Anonuevo	PIO-Lagna	Provincial Irrigation Engineer
		Mr. T.Usis	PIO-Quezon	Irrigation Sup't
10月26日	NIA	Mr. M.M.Landicho	Surface Water Section, PDD	Principal Engineer A
		Mr. E.O.Talip	Hydrography Section, PDD	Supervising Engineer A
		Mr. C.P.Pardo	Surface Water Section, PDD	Hydrogeologist
10月29日	NIA	Mr. W.S.Tiangco		Assistant Administrator
	NIA	大石専門家		
	NEDA	Ms. Adriano		

- DA : Department of Agriculture  
 NIA : National Irrigation Administration  
 IADCCO : International Agriculture Development Cooperation Coordinating Office  
 NEDA : National Economic development Agency  
 U.P. : University of Philippines



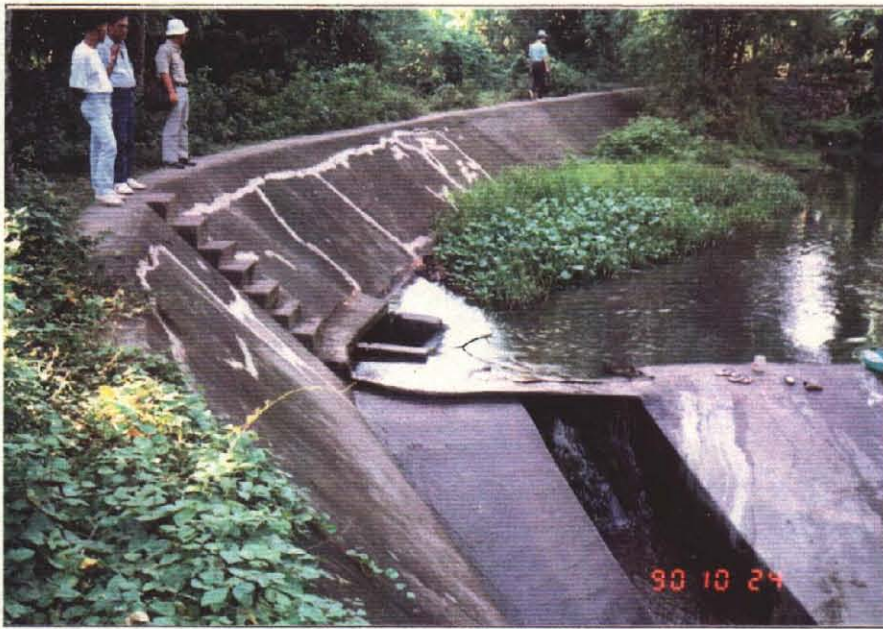
計画地区  
及びポンプ小屋



ポンプ小屋



ポンプ用エンジン



既存取水施設



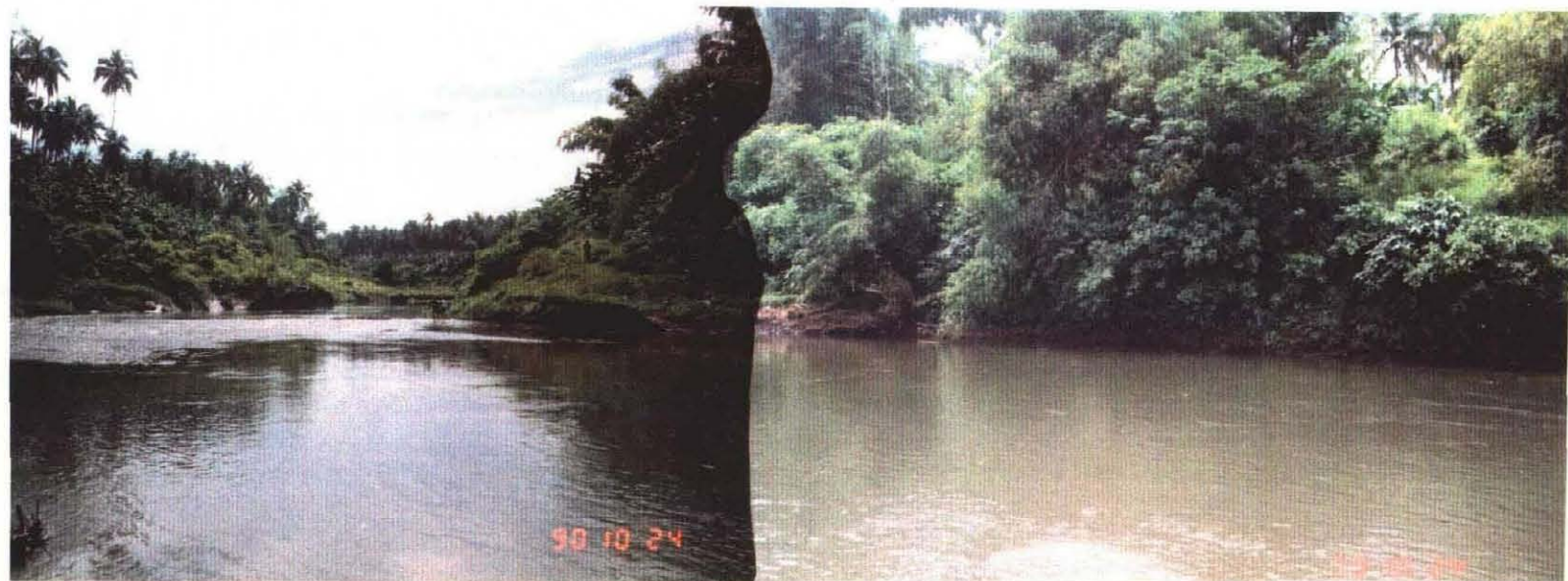
既存施設



地区内のメインロード  
(ルセナに至る)



計画取水地点(上流側)



計画取水地点(下流側)

## PROJECT PROPOSAL

**PROJECT TITLE :** ESTABLISHMENT OF AN AGRICULTURAL RESEARCH AND MANAGEMENT INFORMATION SYSTEM (ARMIS)

**PROPONENT :** BUREAU OF AGRICULTURAL RESEARCH (BAR) DEPARTMENT OF AGRICULTURE (DA)

### 1. BACKGROUND

#### 1.1 Overview of Agricultural Development

The basic aim of agricultural development in the medium-term is to lay the foundation of an equitable, efficient and ecologically sustainable growth in the agricultural sector. The objective is not only to achieve production targets on a competitive basis but also to increase the real income of the poorer agricultural households. This means that food security in basic staples and agricultural diversification shall continuously be addressed consistent with relative scarcities and comparative advantages.

The role of government is to create the policy and institutional framework and to provide the necessary incentives and investments in such areas as infrastructures, research and technology. The private sector shall be called upon to propel the economic recovery in the countryside. People's participation through farmers' institutions is recognized as key factor in bringing about rural/agricultural development.

Moreover, considering country's limited land resources -- and its relation to an *expanding population* -- the *policies and strategies to be adopted over the plan period*, aside from optimizing the sectors' growth potentials, should be able to lay the groundwork for the synchronized growth of agriculture with the industrial sector.

The agricultural/rural sector shall concentrate on the following objectives over the next five years :

- (a) To enhance small farmers' income;
- (b) To sustain the increase in productivity;
- (c) To effect an equitable distribution of the factors of and the returns to



- production;
- (d) To attain food self-sufficiency or self-reliance for improved nutritional well-being;
  - (c) To create/increase agro-based employment opportunities among the rural population particularly the landless rural workers and sustenance fishermen;
  - (f) To improve the delivery system for agricultural crops/commodities, farm inputs, and services; and
  - (g) To institutionalize the expanded participation of farmers through cooperatives and other farmers' organizations.

To realize the objectives of the sector for 1991-1995, the following strategies and policies shall be adopted :

- 1) Strengthening of the production system through efficient use of lands, crop diversification. lower costs of farm inputs, improvement of farm technology and appropriate management and the conservation of lands and water resources. The latter is to ensure the long-term sustainability of agriculture;
- 2) Strengthening of market support systems through price stabilization, providing rural market infrastructure, promoting market development and organization, adopting agricultural policies in the context of world trade; and
- 3) Strengthening of support services and facilities by ensuring credit accessibility and savings mobilization in the rural areas, improving research, extension, information and other support services, promoting social industries, minimizing agricultural risks and strengthening of farmers' organization.

## 1.2 Objectives of Agricultural Research and Extension System

A vigorous research and extension system shall be adopted to respond to the needs of the dynamic agricultural sector. The increasing demand for agricultural commodities brought about by the population growth requires an enterprenurial perspective in agricultural research and extension systems. The adoption of technologies is presently constrained by the difficulty in determining the replicability of

the developed technologies. The situation restricts the extension system since its network, by itself, is incapable of identifying the spillover effects that could help them estimate the ceiling level of adoption and its probability of success.

Agricultural and extension shall be geared towards the development and transfer of location-specific, cost-effective and income-enhancing technologies for the small farmers and fishermen. These objectives are in conjunction with the Department of Agriculture's medium-term goal which is to increase the monthly average farm family income to a level above the current poverty line of ₱ 3,700 by 1992.

Small farmers/fishermen will be the main focus of research and extension during the next five years. Farmers and fishermen, including their dependents, comprise about 70% of the population. Forty percent of these earn below the rural poverty line of ₱ 1,758.00 per month. Giving them the necessary assistance in term of transfer of technologies that can improve farm productivity and income under favorable market environment will undoubtedly be beneficial to the nation in general. Other considerations for the improvement of the farmers' and fishermen's incomes are the initiation of research and extension programs that will generate employment for the rural sector and enhance access to technologies, farm inputs and support services such as credit.

While research and extension are aimed at helping small farmers and fishermen increase their income, equal importance will be given to research and extension activities that will promote the efficiency of the factors of production. Thus, research and extension will also aim at the attainment of food security, increased and stabilized earnings from agricultural exports, and reduced import dependence on products where the country has a comparative advantage.

### 1.3 Necessity of ARMIS

The Department of Agriculture (DA) has for its primary mandate the development of agriculture in the country. One way of ensuring this is by establishing an improved resource management whereby its clientele and targetted beneficiaries can equitably access DA's resources. In the light of streamlining the equitable distribution of such resources, an effective agricultural research management and information system could be institutionalized. Such can be effected by institutionalizing the linkages between DA databases of unprocessed agricultural statistics with agricultural research

which could strengthen a data-based decision-making. This situation could bring about improved extension of services to the rural community with the end view of attaining increased farm productivity and income, greater rural employment opportunities, stable and adequate farm prices, improved nutrition and the development of products for export and import substitution.

Corollary to the attainment of these goals is the need for a well-coordinated research-extension system responsive to the dynamic nature of agriculture and a research program that is geared towards the development of technologies that are relevant to the farmers. The proposed ARMIS should be able to provide production and profitability information needed for strategic, supervisory and operational planning and control all the way from the lowest to the topmost rung of the DA management.

Thus, by virtue of Executive Order 116 and Memorandum Order Number 4, Series of 1987, the Bureau of Agricultural Research (BAR) was created and operationalized to strengthen and streamline the administrative and management structure for research in the Department of Agriculture.

One of the main concerns of the BAR is the establishment of a computerized data-base management information system to provide an accurate and timely feedback mechanism between researchers and users to improve the data-base management information systems in the regions. The databases that the ARMIS can create shall be used in the processing of research and statistical information needed in the performance of research and statistical functions as well as in the aggregation of data for storage at the DA Computer Services. These aggregates could be one source of updating the databases of the DA Central Office on the major functions of the Department. These Departmental databases include POLICIES, PRODUCTION, RESEARCH AND TECHNOLOGY, MARKET DEVELOPMENT, SUPPLY AND PRICES OF AGRICULTURAL CROPS, specifically, RICE and CORN, EMPOWERMENT PROGRAMS, and AGRO-INDUSTRIAL LAWS. These databases shall be created from the files of each of the agricultural sectors available in BAR and BAS such as the crops development, soils and irrigation development, fisheries development, livestock development, institution building, market development and staff development sectors.

Since the BAR is relatively new, the computer facilities needed in efficiently performing its functions of monitoring, evaluating and integrating all DA researches in the regions including those of the staff bureaus and attached agencies are lacking. The

BAS, on the other hand, has accumulated voluminous data that require extensive computer space allocation and computer time utilization.

The processing and analysis of data and reports from the regions and provinces cannot be done on time due to this limitation. This inability to process and analyze important research and statistical information hinders the BAR and the BAS from efficiently executing their functions like the formulation of guidelines and research policies and the coordination of all agricultural statistics and economic research activities of all bureaus, attached agencies and regional offices under the Department.

The fact that the BAR is the central research coordinating body of the DA means that the Bureau shall be handling voluminous research information from the various research implementing units of the DA. The BAS, on the other hand, may have several microcomputers but these could only provide information processing for the local DA unit it services and is constrained by size in processing the merged files created by all of these microcomputers.

The experience of BAR with the Regional Integrated Agricultural Research System (RIARS) in the conduct of the Department's nationwide on-farm technology verification trials proves the need for a more efficient data management system. The current data management information system in the regions are limited only to data entry, storage and retrieval in software packages that have very limited applications.

Most of the existing ALTOS microcomputers being used in the regional office have defects and do not have the required speed for a rapid and effective data processing. Besides, the RIARS, now known as the Regional Integrated Agricultural Research Centers (RIARC), have limited access to data computerization in the regions since each region is provided with only a single unit of ALTOS microcomputer and gives low priority to research for its utilization. The procurement of microcomputers and the mainframe for shared use by the BAR and BAS, will greatly facilitate the implementation of an efficient management information system.

The BAR through its Information Systems Division (ISD) will provide the mechanism and system for data sourcing, integration and feedback of specific information needed by researches, planners and administrators in the conduct of research or research supportive activities. Basically, the same activities will be done by the BAS for its statistical data processing. Currently, the main projects are to run

efficiently the management information system, establish and develop, feasible schemes for research statistical utilization, develop training programs, and build and maintain a modern library. This project involves the following activities :

1. establish and operationalize a computer-based networked information system for both agricultural research and statistical information that will provide DA network and the general public with timely and accurate information on agricultural data;
2. establish a system for monitoring research activities in the DA regional offices, bureaus, attached agencies and cooperating agencies;
3. establish linkages with the Information Offices of DA units, State Universities and Colleges and other international and local research and statistical institutions;
4. translate research results into forms suitable to different users;
5. provide assistance to other staff bureaus, attached agencies and regional offices in the conduct of research and statistical activities;
6. organize national symposia, seminars, conferences, workshops, reviews of agricultural research findings in coordination with the concerned units;
7. organize/manage training activities and seminars that will promote and improve research communication and statistics information;
8. produce printed materials and periodicals such as newsletters, documentation of outstanding research results on agricultural production and marketing relevant to farmer's profitability and nutrient intake; and
9. ensure the maintenance and institutionalization of the established ARMIS even after the life of the project by strengthening the research and technical capabilities of the BAR and BAS personnel.

The BAR aims to extend the most updated and appropriate technology to Filipino information needed for planning and operations of the BAR. It is in this regard, that the need for an effective and efficient agricultural information and

management system arose, specifically to provide the decision system support for top-level planning and the management information system for staff and line operations.

With the establishment of an Agricultural Research and Management Information System, the BAR envisions to integrate the activities of the Bureau of Agricultural Statistics (BAS) and link with other government institutions such as Cooperative Development Authority (CDA). BAS deals with statistical data on the different agricultural commodities such as crops, livestock, fishery and other socio-economic data while the CDA, on the other hand is responsible for the development and strengthening of Agricultural cooperatives.

## 2. NECESSITY OF FEASIBILITY STUDY

It is no doubt that the ARMIS is useful and effective to strengthen the whole activities regarding to agricultural research and extension. A feasibility study, however, needs to be undertaken prior to pursuing the proposed project in order to ensure the efficient implementation of the project activities. It is essential to clarify and assess the present condition and constraints related to the project through the detailed study, particularly following aspects;

- (1) Philippine Council for Agricultural, Forestry and Natural Research and Development (PCARRD) of the Department of Science and Technology (DOST) is the existing mandate to control and manage the agricultural research information. However, the data-based created by PCARRD is not always utilized for the purpose of the agricultural research and extension activities in DA effectively. The ARMIS shall be planned and designed through the detailed studies of the existing agricultural research information system in PCARRD to prevent establishment of ineffective system.

Furthermore, the BAR envisions to integrated the activities of the BAS and BACOD with the establishment of the ARMIS. This integration must be planned through the studies of the present information system and future correlative system among the BAR, BAS and CDA.

- (2) Agricultural development projects are implemented not only by the DA but also by the other Government Agency such as the Department of Agrarian Reform (DAR) and the National Irrigation Administration (NIA). The ARMIS shall be useful system for these Agencies.

Many agricultural data and information in the DA have been used in order to formulate an agricultural development plan in irrigation projects and agrarian reform projects. However, the proposed plan has not been always monitored by the DA. As a result, expected project benefits have not been attained at the operation stage of the project. This constraints preventing the successful achievement of project target can be solved by the smooth streamline of data and information between the DA and other Agencies. The ARMIS shall be established to provide this smooth streamline. For this purpose, it is indispensable to study the information system required by the DAR and NIA and to integrate that into the ARMIS.

- (3) The BAR plans to adopt a computer data-based information system to enable the Bureau to deliver accurate and timely information. This system requires well-developed telecommunication networks in order to transmit the agricultural data and information. However, the telecommunication networks in the Philippines are underdeveloped condition, and the networks in some Regions are very poor. The transmission of data to/from such Regions is carried out by the form of hard copy or hard disk. It is very important to study the present telecommunication system in the Philippines prior to determining the structural function and capacity of the ARMIS.

### 3. OBJECTIVE OF THE STUDY

The objectives of the study is to formulate the establishment plan of an Agricultural Research and Management Information System (ARMIS), which serves to strengthen the DA operation in data management and research utilization by providing appropriate facilities and infrastructure for proper and faster dissemination of relevant information to various end-users.

### 4. SCOPE OF THE STUDY

The feasibility study shall cover the following activities :

- (1) Inventory survey on the existing DA's research stations.
- (2) Study for current status on the following ;
  - a. Agricultural research management and information system ;

- Past and present research activities,
  - Research results monitoring activities,
  - Information system, etc.
- b. Agricultural statistic management and information system ;
- Past and present statistic activities,
  - Statistic data processing system,
  - Statistical information release system, etc.
- c. Present activities of PCARRD and the linkage between PCARRD and BAR
- d. The linkage with information offices of DA units, State University and Colleges and others.
- e. The current situation of extension and research linkage.
- (3) Study on present telecommunication system
- a. National telecommunication system
- b. DA internal communication system
- DA central office and Regional/provincial ooffice,
  - DA offices and research institutions.
- (4) Identification of the constraints on the present agricultural research management and information system.
- (5) Preparation of basic plan of agricultural research management and information system;
- a. Improvement plan of organizational structures
- b. Facilities and equipment plan
- c. Stage-wise establishment plan, if necessary.
- (6) Preliminary design of facilities and equipment of proposed system.



- (7) Preparation of operation and maintenance plan for the proposed system.
- (8) Socio-economic evaluation of the project.
- (9) Cost estimate and implementation plan.

## 5. STUDY SCHEDULE

The study will be carried out for a duration of nine (9) months as shown in Fig. 1.

## 6. EXPERTISE INPUT

The following expatriate experts and engineers will be required for executing the study :

- (1) Team leader
- (2) Agricultural research expert
- (3) Livestock research expert
- (4) Fishery research expert
- (5) Agricultural statistician
- (6) Research management expert
- (7) Computer system engineer
- (8) Telecommunication expert
- (9) Architect
- (10) Socio-economic analyst

## 7. REPORTS

The following reports shall be prepared in the course of the study.

- (1) Inception Report : At the commencement of the field works

- (2) Interim Report : At the end of the field works
- (3) Draft Final Report : At the end of the home works
- (4) Final Report : At the end of ninth (9th) month from the commencement of the Study.

## 8. UNDERTAKING OF GOP

In accordance with the Notes Verbales exchanged between GOJ and GOP, GOP shall accord privileges, immunities and other benefits to the Japanese study team and through the authorities concerned, take necessary measures to facilitate smooth implementation of the Study.

1. GOP shall be responsible for dealing with claims which may be brought by third parties against the members of the Japanese study team and shall hold them harmless in respect of claims of liabilities arising in the course of, or otherwise connected with the discharged of their duties in the implementation of the Study, except when such claims or liabilities arise from gross negligence or willful misconduct of the above-mentioned members.
2. DA shall, at its own exposure, provide the Japanese study team with the following if necessary in cooperation with other agencies concerned :
  - (1) Available data and information related to the Study
  - (2) Counterpart personnel
  - (3) Suitable office space with necessary equipment in Metro Manila
  - (4) Credentials or identification cards to the members of the Japanese study team.
3. DA shall make necessary arrangements with other governmental and non-governmental organizations concerned for the following :
  - (1) To secure the safety of the Japanese study team

- (2) To permit the members of the Japanese study team to enter, leave and sojourn in the Philippines for the duration of their assignment therein, and exempt them from alien registration requirements and consular fees.
- (3) To exempt the members of the Japanese study team from taxes, duties and any other charges on equipments, machinery and other materials brought into the Philippines for the implementation of the Study.
- (4) To exempt the members of the Japanese study team from income tax and other charges of any kind imposed on or in connection with any emoluments or allowances paid to the members of the Japanese study team for their services in connection with the implementation of the Study.
- (5) To provide necessary facilities to the Japanese study team for remittance as well as utilization of the funds introduced into the Philippines from Japan in connection of the implementation of the Study.
- (6) To secure permission for entry into private properties or restricted areas for the implementation of the Study.
- (7) To secure permission for the Japanese study team to take all data and documents (including photographs and maps) related to the Study out of the Philippines to Japan.
- (8) To provide medical services as needed. I

ts expenses will be chargeable on the members of the Japanese study team.

**Fig. 1 TENTATIVE SCHEDULE**

MONTH	1	2	3	4	5	6	7	8	9	10	
Study in the Philippines											
Study in Japan											
Reports											
(1) Inception	▲										
(2) Interim					▲						
(3) Draft Final							▲				
(4) Final									▲		

PROJECT PROPOSAL  
FOR  
JAPANESE GOVERNMENT TECHNICAL ASSISTANCE

1. PROJECT TITLE : MASTER PLAN STUDY ON AGRO-BASED  
INDUSTRY DEVELOPMENT PROGRAM  
(AIDP)
2. LOCATION : NATIONWIDE
3. EXECUTING  
AGENCY : DEPARTMENT OF AGRICULTURE (DA)
4. OBJECTIVES OF THE STUDY :

The proposed master plan study is intended to provide the framework plan for nationwide agro-based industry development in the rural areas with particular emphasis on:

- (1) the effective utilization of endowed natural, economic and human resources,
- (2) identification of priority areas and fields for development,
- (3) strategies for promotion of agro-based enterprises,
- (4) adequate government investments in infrastructure and other physical facilities supportive of such agro-based enterprises, and
- (5) government support services for industry promotion, specifically on:
  - (a) research and development on location-specific, income-enhancing agro-based technology,
  - (b) dissemination of new production technology/skills to the rural labour force,

- (c) provision of a package of incentives for potential investors, and
- (d) support for both domestic trade and export marketing.

## 5. BACKGROUND INFORMATION

- (1) In the Philippines, the agricultural sector has always played a dominant role in the national economy. It has contributed about 30% of the Gross Domestic Product (GDP), generated more than one-third of total export earnings and employed about half of the total labor force.
- (2) Despite the agricultural sector's significant contribution to the economy, the rural areas, where the majority of the farmers and fisherfolks live, continue to suffer from poverty. In 1988, 63% of families in the rural areas were below the official poverty line of ₱2,061 (approximately \$80) per month. The rural sector has a higher incidence of poverty (67%) compared to the urban sector (57%). The rural-urban inequality has worsened over time. In fact, the ratio of average family rural income to average family urban income declined from 0.67 in 1975 to 0.47 in 1988. In recent years, more than 80% of farming households were classified within the lower 30% income bracket.

Moreover, agricultural output per capita declined in the 1980's compared to the 1970's and has remained generally stagnant in the past decade. The full development of the Philippine agriculture's potentials have not yet to be tapped.

- (3) Low farm productivity and rural poverty in turn, are direct results of convergence of factors which retarded

the growth and development of the farming community. These factors are identified as follow: (a) limited access of small farmers to factors of production such as but not limited to land, credits, production inputs, and government/private sector services; (b) poor, inefficient and limited government services for the farming and fishing populace; (c) past policy biases which tended to favor the urban and industrial sectors at the expense of agriculture and rural sector, and (d) burgeoning population and indiscriminate exploitation of natural resources. The bleak opportunities in the countryside forces the unemployed rural folks to seek employment in the urban commercial areas, which again create another social problem of urban poor.

(4) Under such situations, the Government has set forth the Medium-Term Philippine Development Plan (1987 - 1992) in which the following objectives are emphasized for agricultural development:

- (a) To enhance small farmers' income,
- (b) To sustain the increase in productivity,
- (c) To effect an equitable distribution of income,
- (d) To attain food self-sufficiency/self-reliance,
- (e) To create/increase employment opportunities in rural areas,
- (f) To improve the marketing system, and
- (g) To institutionalize the expanded participation of farmers in development efforts.

(5) The proposed project (AIDP), aimed at promoting the location-specific agro-based industries in the rural areas, will be one of the counter-measures to tackle the rural/urban poor problem. In addition, the project will contribute largely to the realization of the above agricultural policies.

The agro-based industries in rural areas will provide proper venues for agricultural diversification to increase farm income and generate additional employment opportunity. These will facilitate the absorption of excess labour from the agricultural sector by the agro-industrial sector in the rural areas.

The agricultural sector provides the raw material, the inputs to the agro-based industries. Stable prices and assured market provided by the agro-industrial sector will, in turn, invite additional farm investments and encourage the adoption of improved farm technologies. In this sense, the agro-based industries in rural areas will largely contribute to diversification of the presently stagnating economic structures in the agricultural sector.

- (6) Coconut and sugar industries have long played a leading role in the Philippine economy. These industries have produced a major part of export earnings, helping enhance rural economy since products are processed in the rural centers. However, the Philippines' over-dependence on exports of coconut oil and sugar, both of which suffered from the drastic price decreases in the world market, shows the need to diversify such a monopolized structure of agro-based industries and create a manifold types of agro-based industries which are location-specific based on the difference in the endowed resources and level of development.
- (7) The policy measures designed to activate the Philippine rural economy and improve the rural income should therefore apply to the diversified agro-based industries which are location-specific and profitable with full use of rural resources.



- (8) Under the Comprehensive Agrarian Reform Program (CARP), the DA shall be responsible for providing the necessary agricultural technical services to the farmer-beneficiaries after the Department of Agrarian Reform (DAR) completes his status from tenant to land-owner. As owner-manager of the land he tills, the CARP beneficiary will now be responsible for marketing and getting the best price for his produce. As such, he needs to be trained the rudiments of agricultural entrepreneurship. The proposed project (AIDP) also aims to assist the development of markets and promote rural-based industries for the land-owners affected by the CARP. The project shall also provide assistance to DA through a massive training program for the DA extension force, with an orientation towards the development of agro-based industries.
- (9) There are several possible investors for the agro-based industry development in rural areas; they are (a) farmers cooperatives including the CARP beneficiary farmers for cottage and small industries, (b) rural-based investors such as the CARP affected land-owners and the Filipinos working abroad for small and medium scale industries, and (c) local Manila-based investors and/or foreign investors for large scale industries. The proposed AIDP shall provide necessary supports to each of such categorized investors.
- (10) Prospective farm raw and processed products include fruits (like durian, mangostine, mango, passion fruits and pineapple), edible oil producing plants (like safflower and sesame), mushroom, medicinal herbs and stevia, spices like black pepper, nuts, cutflowers and foliage plants, sericulture, fiber crops (like ramie), beverages (like cocoa and coffee) and highly marketable vegetables such as garlic, chilli and onions. Livestock and fishery sectors also have promising resources such

as poultry/swine/beef cattle raising and fattening, dairy industry producing cheese, butter and yoghurt, aquaculture and processing of high valued aqua marine products such as fishes and seaweeds.

- (11) The proposed master plan study on agro-based industry development program (AIDP) is intended to formulate the framework plan for nationwide agro-based industry development in the future, through (a) preparation of an inventory of the potential resources in rural areas, (b) studies and selection of priority development areas and fields on a provincial basis, (c) preliminary studies on required infrastructures and other physical facilities, and (d) overall studies on the required government supports for promotion of agro-industry development.

## 6. AGRO-BASED INDUSTRY DEVELOPMENT PROGRAM (AIDP)

The proposed AIDP will address the following objectives:

- (1) Diversification of rural economic structures

The prime agricultural policies of the Government have been (a) self-sufficiency of basic foods such as rice and corn and (b) increase of rural income. Much efforts have been made toward improving crop productivity with positive results in rice and corn production. However, much is still to be done to alleviate the rural community from poverty. The Government considers that agricultural development should take a wider approach to increase the rural income in every possible way and this includes promotion of agro-based industries in the rural areas.

- (2) Increase of rural income

Most of the existing manufacturing enterprises have been established mainly in Metro Manila and nearby provinces.

This has caused a wide income disparity between urban and rural areas. Rural people migrate to the urban centers, and thus aggravate the problem of urban poor. Once the market is assured, farmers will be encouraged to increase their farm production, and the rural economy will be enhanced not only directly by establishment of agro-based industries but also indirectly by the increased marketing/trade activities induced by the increased production.

(3) Generation of new employment opportunity in rural areas

The agro-based industries will surely create new employment opportunity in the rural areas and will mitigate the continuous migration of rural population to urban areas. Generation of new employment opportunity will also activate the rural economy.

## **7. NECESSITY OF MASTER PLAN STUDY**

- (1) In making decisions on investments, potential investors require data and information on natural-economic-technical-social resources of the localities under consideration. The Board of Investment (BOI) publishes the "Investment Priority Plan" every year, identifying possible regional sites in cooperation with the Department of Agriculture (DA) for investment promotion to help the possible investors in selecting sites for their projects. However, such possible regional sites are merely indicative, and most of the basic information required for development of agro-based industries have not been provided yet.
- (2) There is no existing studies on the nationwide agro-based industry development in rural areas. Whatever studies are available are usually incomplete focusing in one or two components only, provincial or at most

regional in scope and limited in perspective despite the Governments' intention to promote the agro-based industry development in the countryside.

- (3) It appears that the country encounters some difficulties in executing such development studies due to inadequacy of varied experiences in the field of agro-based industries. The Government therefore would like to ask the Government of Japan to extend the technical assistance for making (a) a master plan study on agro-based industry development in rural areas, and also (b) feasibility studies for some selected provinces as pilot areas development.
- (4) It is also envisaged that the proposed master plan study on the agro-based industry development program (AIDP) will include definite programs for (a) the required infrastructures, and (b) support services of DA for research and development, dissemination of new production technology/skills to the rural labour force, provision of a package of incentives for agro-based enterprises, and marketing support for the products of agro-based industries in both domestic trade and export.

## 8. PROPOSED SCOPE OF THE STUDY

The master plan study will consist of following two (2) Phases:

Phase I : Inventory survey and Formulation of Master Plan on Agro-based Industry Development Program (AIDP)

- (1) Collection of data on the following by province (Inventory survey):

- climate,
- topographical maps,
- land tenure conditions,
- water resources,
- soil and land use maps,
- existing agro-based industries,
- existing processing technologies for identified or potential local agri-business ventures,
- existing infrastructures and other physical facilities (post-harvest facilities, farm-to-market roads, telecommunication, water and power supplies) supportive to agro-based industry projects,
- government support services (credit, extension and training, marketing support, research and development for new technology, incentives for investors)

(2) Assessment of investment opportunity in agro-based industry on a provincial basis:

- industry situation and outlook
- endowed physical human resources for prospective agro-based industries
- marketing potential (foreign and domestic)
- comparative costs and returns of alternative agro-based industries
- investment requirement of putting-up alternative agro-based industries (capital and operating costs)
- presently available incentives for prospective agro-based industries and
- availability of technical information on promising agro-based industries

(3) Formulation of provincial development strategies

- provincial development targets and prospective development strategies to attain the targets

- required infrastructures and other physical facilities
- required government support services

(4) Formulation of a master plan

- national development target and strategies
- proposed project management structure and responsibilities at each level of the management structure
- participating agencies/offices and internal and external linkages between operating units/offices
- classification of sub-projects under AIDP by province (scale and type of the investments)
- setting-up of the "typical models" of promising agro-based industries based on the above
- development program for 10 years
- infrastructure development plan
- government support services program
- financial requirement for the development program

Phase II : Feasibility Study on Representative Sample Sub-Projects in the Priority Provinces

- (1) Selection of the priority provinces
- (2) Selection of the representative sample sub-projects for feasibility studies in the selected priority provinces
- (3) Feasibility studies on the representative sample sub-projects
- (4) review of the master plan on the basis of the feasibility studies
- (5) preparation of definitive master plan for agro-based industry development program

## 9. EXPECTED OUTPUTS

The following are the expected outputs:

- (1) Inventory of prospective agro-based industries
- (2) Assessment of potential agro-based industries
- (3) Provincial agro-based industry development program
- (4) Overall framework plan for agro-based industries  
which includes:
  - infrastructure plan
  - government support services program
  - project management and organization
  - action program for 10 years
  - financial requirement of the program

## 10. EXPERTISE INPUT

The following expatriate experts and engineers will be required for executing the master plan study:

- (1) Team leader
- (2) Regional economic planner
- (3) Water resources expert
- (4) Land use/soil expert
- (5) Market specialist
- (6) Agriculturist
- (7) Agro-industry/processing experts  
(crops/livestock/fishery/forestry)
- (8) Civil engineers (transportation/energy)
- (9) Financial analysis expert
- (10) Environmental expert
- (11) Project Economist
- (12) Project Organization/Institutional Expert

## 11. STUDY SCHEDULE

The master plan study shall be carried out for a duration of twenty-one (21) months after its commencement and be divided into the following phases:

- Phase-I : Inventory Survey and Formulation of Master Plan on Agro-based Industry Development Program (AIDP) (12 months)
- Phase-II : Feasibility Study on Representative Sample Sub-Projects in the Priority Provinces (9 months)

## 12. REPORTS TO BE PREPARED

The following reports shall be prepared in the course of the Study within the period specified below:

- (1) Plan of Operation : at the commencement of the Study
- (2) Progress Report-I : not later than three (3) months from commencement of the Study
- (3) Progress Report-II : not later than seven (7) months from commencement of the Study
- (4) Interim Report (master plan) : not later than 12 months from commencement of the Study
- (5) Draft Final Report (master plan and F/S studies) : not later than 19 months from commencement of the Study
- (6) Final Report : not later than 21 months from commencement of the Study



### 13. RESPONSIBILITY OF THE GOVERNMENT

DA shall, at its own expense, provide the Study Team with the following, if necessary, in cooperation with other agencies concerned:

- (1) available data and information related to the Study,
- (2) counterpart personnel,
- (3) suitable office space with necessary equipment in Metro Manila, and
- (4) credentials or identification cards to the member of the Study Team.

Whenever necessary, the DA shall make arrangements with other concerned agencies, at its own expense, in order to:

- (1) secure the safety of the Study Team;
- (2) permit the member of the Study Team to enter, leave and sojourn in the Philippines for the duration of their assignment therein;
- (3) exempt the member of the Study Team from taxes, duties, fees and other charges of equipment, machinery and other materials to be brought into the Philippines for conduct of the Study;
- (4) to exempt the member of the Study Team from income tax and charges of any kind imposed on or in connection with any emolument or allowance paid to the member of the Study Team for his/her services in connection with the implementation of the Study;
- (5) provide necessary facilities to the member of the Study Team for remittance as well as utilization of the funds

brought into the Philippines from Japan in connection with the implementation of the Study;

- (6) secure permission for entry into private properties or restricted areas for the conduct of the Study;
- (7) secure permission to take all data and documents (including photographs) related to the Study out of the Philippines to Japan by the Study Team; and
- (8) provide medical services as needed and expenses for such will be chargeable against the member of the Study Team.

**PROJECT AID PROPOSAL  
FOR  
TECHNICAL ASSISTANCE**

I. PROJECT TITLE

Feasibility Study on the Quipot River Irrigation Project

II. PROPONENT MINISTRY/AGENCY

National Irrigation Administration (NIA)  
The Republic of the Philippines

III. PROJECT BACKGROUND/RATIONALE

The Philippines has a total land of about  $300 \times 10^3$  km<sup>2</sup>. The total population as of 1987 was estimated to be about 57.3 million with its growth rate of around 2.4% per annum during the last decade. The working population over 15 years of age and over was about 35.4 million (or about 62% of the total population). Real employment was, however, limited to 35.9% of the total population, or 58.2% of the potential labour force.

The Philippines' economy was depressed to a serious extent during the period of 1983 - 86, when the GDP growth turned negative. However, the economic growth accelerated in 1987 with the main impetus coming from a strong recovery in personnel consumption as the result of tax reformation, higher wages and spending program of the Government. The GDP in 1987 amounted to ₱ 708 billion at current prices or about ₱ 12,300 (equivalent to US\$ 583) per capita, however, it is still below 1983 level.

In the Philippines, the agricultural sector has always played a dominant role in the national economy, accounting for over 25% of GDP and employing about 50% of the total labour force. The strategy of the Government is to enhance agricultural productivity as the basis of self-sustaining economic growth. However, farmers in rural areas continue to suffer from poverty.

Accordingly, the following objectives are emphasized for agricultural development in the Medium-Term Philippines Development Plan (1987 - 1992)

- to increase small farmers' income,
- to sustain the increase in productivity,
- to effect an equitable distribution of income,
- to attain food self-sufficiency/self-reliance,
- to create/increase employment opportunities in rural area, and
- to institutionalize the expanded participation of farmers.

Moreover, the Corporate Plan (1990 - 2000) prepared by NIA indicates that a progressive implementation of irrigation projects including new systems and rehabilitation of existing systems is essential to stimulate the rice production to keep up with the increase in population. The plan envisages to generate a total of  $530 \times 10^3$  ha and to provide rehabilitation of existing communal and national irrigation systems for  $1,103 \times 10^3$  ha in the next one decade, in consideration of the Medium-Term Philippines Development Plan (1987 - 1992) and CARP.

The project area is located at about 120 km southeast from Manila. The area is located in Tiaong and Candelaria municipalities of Quezon Province, and San Juan municipality of Batangas Province in Region IV, and extends on both sides of the Malaguing river. There exist about 3,000 ha of existing paddy fields including rainfed of 500 ha and remaining 2,500 ha of existing irrigated fields which are mostly irrigated by shallow well pumps owned by private individuals, and supplemented by river and stream runoffs.

Due to very limited runoffs of small rivers and streams and deterioration of pumps, farmers in the area face shortage of irrigation water, although perennial river runoff in the Quipot river is available for gravity irrigation. Moreover, the downstream area suffers from ill drainage almost every year. Therefore, all the beneficiary farmers have keen interest to provide the gravity irrigation system and to improve drainage conditions.

The project aims to increase and stabilize the agricultural production through introduction of irrigation and drainage improvement, as well as to raise the living standard of inhabitants and create/increase employment opportunities in the rural area, in conformity to the objectives of the Medium-Term Philippines Development Plan (1987 - 1992).

#### IV. OBJECTIVES OF THE STUDY

The objectives of the study is to formulate an optimum plan for agricultural and rural development in the area placing emphasis on irrigation, and drainage improvement in the lower area. Due attention should be paid to seasonal floods of tributaries of the Malaguing river.

#### V. SCOPE OF THE STUDY

##### 5.1 Outline of the Study

The study will be conducted to the following Two (2) steps.

Work - I : Data collection, field surveys and investigations, preliminary analyses of the results of field survey and investigations, and formulation of basic development plan in Philippines, and

Work - II : Analyses of the results of the above Work - I, and preparation of the feasibility report in home office.

Each of the work categories will consist of the following work items :

##### Work - I :

##### (1) Collection and review of the existing data and information

##### a) Physical conditions

- Topography
- Meteorology and hydrology
- Geology and soil mechanics
- Soils
- Vegetation
- Others

##### b) Socio-economic status

- Demographic conditions
- Agriculture including livestock
- Land use

- Agro-economy and institution
  - Regional and national economy
  - Infrastructure
  - Marketing and prices
  - Others
- c) Programme
- Regional and national development plans relevant to the Project
- (2) Execution of field surveys and investigations
- a) Assistance for meteorological and hydrological observations
  - b) Topographic survey at major structure sites
  - c) Geological investigations including core drilling at major structure site(s)
  - d) Soil and land use survey
  - e) Inventory survey for existing irrigation systems and rural infrastructure
  - f) Agricultural survey
  - g) Agro-economic and institutional survey
  - h) Regional economic survey
  - i) Flood damage survey
  - j) Construction material and cost survey
- (3) Formulation of basic development plan including :
- Delineation of the project area
  - Preliminary agricultural development plan
  - Preliminary irrigation and drainage plan
  - Preliminary major structure plan

- Preliminary rural development plan
- Basic layout of major facilities
- Preparation of an interim report

Work - II :

- (1) Delineation of the Project area to be benefited by irrigation
- (2) Formulation of agricultural development plan
- (3) Formulation of irrigation and drainage plan
- (4) Formulation of rural development plan
- (5) Preliminary design of project facilities
- (6) Preparation of implementation plan and schedule
- (7) Benefits and costs estimates
- (8) Economic evaluation of the Project
- (9) Preparation of the feasibility study report

5.2 Study Schedule

The period required for the study is estimated at 10 months in total. The tentative schedule of the study is shown in Attachment - 2.

5.3 Reports

The following reports will be prepared and submitted to the Government :

- (1) Inception Report : Twenty (20) copies in English at the end of the one month after commencement of the Study.
- (2) Interim Report : Thirty (30) copies in English at the end of 4th month after the commencement of the Study.

- (3) Draft Final Report : Thirty (30) copies in English at the end of 7th month after the commencement.
- (4) Final Report : Fifty (50) copies in English within two (2) months after receiving comments of the Government on the Draft Final Report.

## VI. ESTIMATED PROJECT REQUIREMENT

### 6.1 Experts Requirement

The engineers or experts required for the study are as follows :

- Team leader
- Irrigation Engineer
- Agronomist/Agro-economist
- Meteo-hydrologist
- Rural development expert
- Pedologist
- Drainage Engineer
- Geologist
- Design Engineer
- Project Economist

The required manpower input as engineers or experts will be about 50 man-months in total.

### 6.2 Government Inputs

The following Government inputs will be needed for smooth execution of the study.

- To provide necessary data and information relevant to the study,
- To despatch counterpart personnel to the expatriate experts including topo-surveyors,
- To provide the office space with necessary facilities, inclusive of electricity and water supply,



- To provide appropriate number of vehicles with drivers,
- To install two automatic rainfall and one automatic water level gauge at appropriate site, and to conduct the observation, and
- To prepare rating curves at the proposed water gauging stations.

Attachment - 2

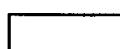
WORK SCHEDULE FOR FEASIBILITY STUDY ON QUIPOT RIVER IRRIGATION PROJECT

ITEMS	MONTH									
	1	2	3	4	5	6	7	8	9	10
WORK-I										
(a) Survey & Investigation										
(b) Basic Plan Formulation										
WORK-II										
Analyses & Study										
Explanation of DFR										
REPORT	▲ ICR				▲ IR			▲ DFR		▲ FR

Note; ICR: Inception Report IR: Interim Report DFR: Draft Final Report FR: Final Report



Field Work in Philippines



Home Office Work