

フィリピン共和国

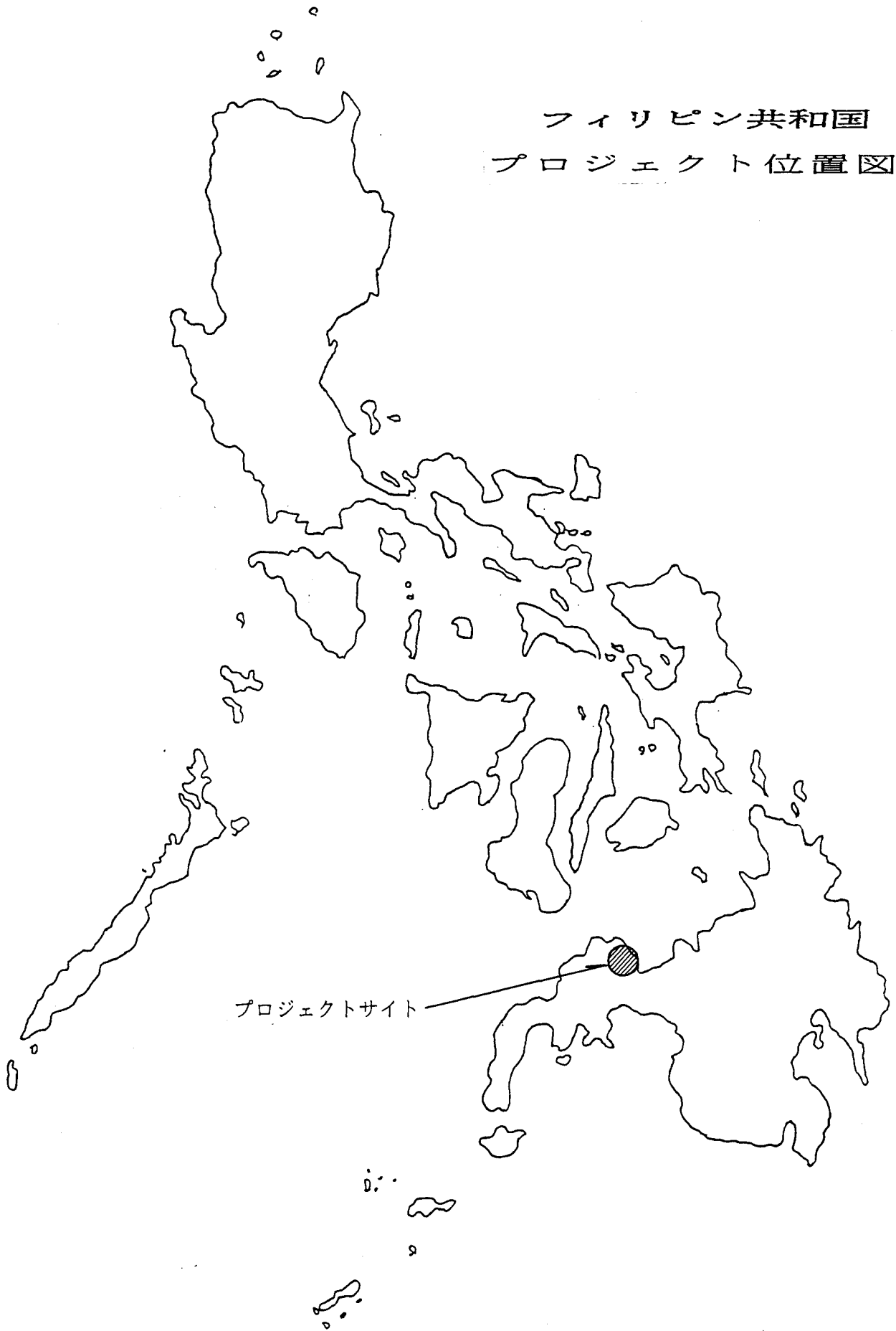
ラヤワン流域開発計画  
リージョン10地域農村資源運営計画  
ミサミスオキシデンタル州農村整備機材計画

プロジェクト ファインディング調査  
報告書

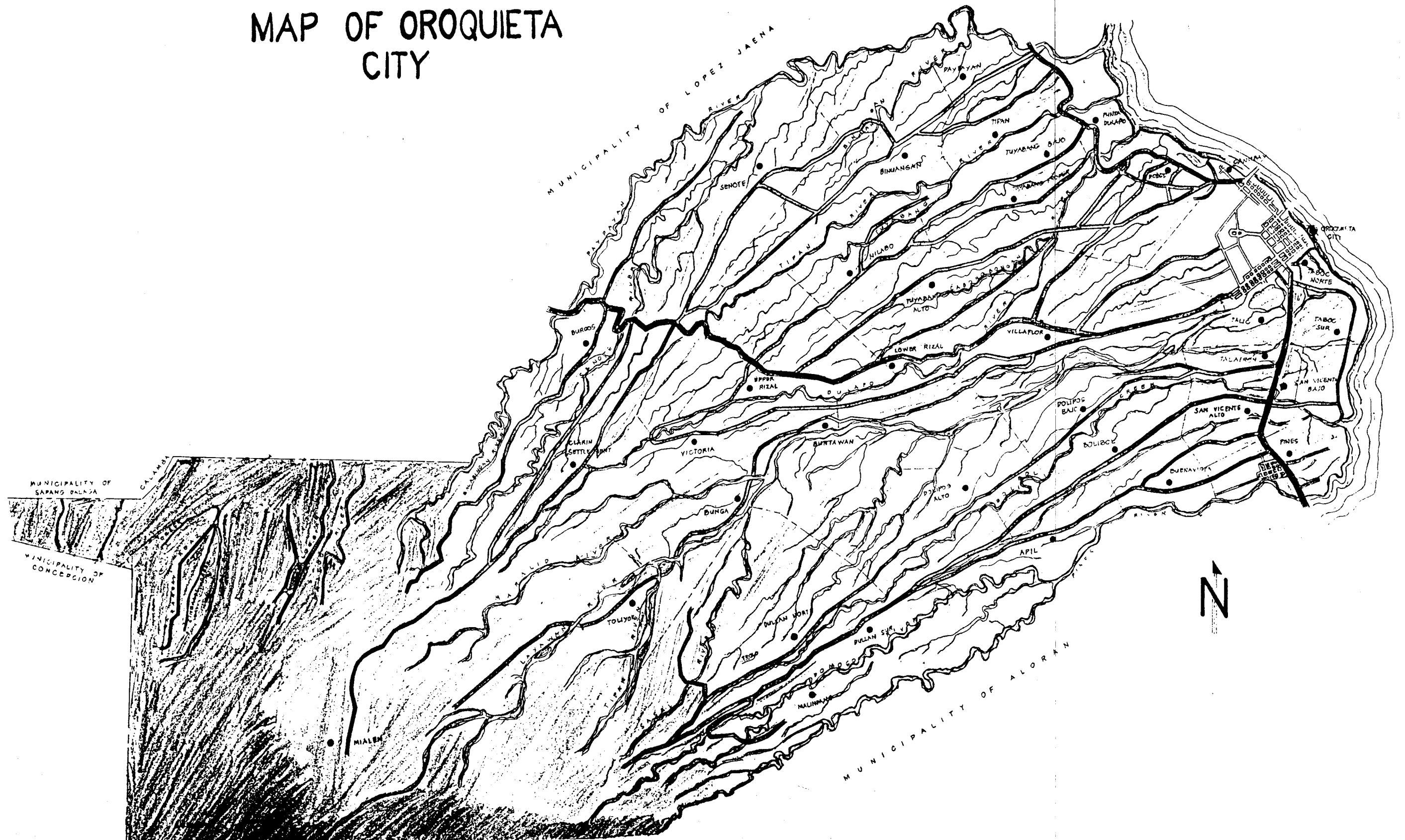
1993年5月

法 国 海外農業開発コンサルタント協会

フィリピン共和国  
プロジェクト位置図(1)



# MAP OF OROQUIETA CITY



## ま え が き

海外農業開発コンサルタント協会（ADCA）は、並里次雄及び西川亨（株）建設企画コンサルタント）の2名からなる調査団を現地に派遣し、ラヤワン流域開発計画に係わる事前調査を実施した。

調査団は平成5年4月19日より4月27日までの9日間同国に滞在し、関係資料の収集及びフィリピン政府担当者との協議等を行った。今回の事前調査の主な目的は、特に開発の遅れているミンダナオ島北西部ラヤワン川流域でアグロフォーレstryを盛り込んだ地域農村総合開発を計画中的である。既に当地域では部分的にADBがF/Sを行っていて、今回のADCA調査では、F/S調査報告の確認と今後のプロジェクト化の可能性を打診すべく、現地調査及び関係機関との意見交換を行い、プロジェクトの確認調査を行った。

現地滞在中に、天然資源省、ミサミスオキシデンタル州、オロケタ市の担当者との協議を重ね、以下

- 1) 受入れ期間 : 天然資源省
- 2) 目 的 : ラヤワン流域開発可能性に関する調査
- 3) 基本方針 : マスタープランの調査結果及び州市の開発方針に基づいて、  
流域総合開発プロジェクトの実施を目指す。

のフィリピン側の本プロジェクトに関する基本方針を確認した。その他下記のプロジェクトを確認した。

1. リージョン10地域農村資源運営計画
2. ミサミスオキシデンタル州農村整備機材計画

最後に、調査団は今回の現地調査に際し、積極的に協力・支援を頂いたフィリピン政府関係省庁担当者諸氏に心から謝意を表明するものである。

平成5年5月 ADCA事前調査団

並 里 次 雄

西 川 亨

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## 1. 背景

フィリピン国は、都市部と地方農村の所得格差是正を推進する上で、特に首都部から遠く離れ、とりたてて産業が少なく開発の恩恵を殆ど受けていないミンダナオ島の産業開発を推進中である。中でも農業生産の潜在性が高いミサミスオキシデンタル州（州都オロケタ市）ラヤワン流域開発計画を推進中である。既にアジア開発銀行の資金援助を受けてマスタープラン調査が終了している。フィリピン政府は本件に関し、開発に係わる資金源を求めている。

## 2. 地区の概要

### 2.1 位置と区域

ラヤワン流域は、ミサミスオキシデンタル州の中央北部に位置し、マリンドン山の北峰から沿岸のオロケタ市まで狭い弧形に広がっている。オロケタ市は北緯 $8^{\circ}23'$ から $8^{\circ}31'$ 、東経 $123^{\circ}33'$ から $123^{\circ}49'$ に位置している。ラヤワン流域は北東にロペツ・ジャエナ自治区と境界を接しており、南にアロラン自治区、西にコンセプション自治区とサパング・ダラガ自治区、東にはイリガン湾と面している。

ラヤワン流域は、総面積は9,956haにわたり、シブカル、タリヨク、ミアレンと呼ばれる3つの広大な内陸のバラングイを含んでおり、それらの面積を合わせると7,000ha以上に及ぶ。

### 2.2 気候

オロケタは一年を通じておおよそ一様な雨量があり、4つの気候タイプがある。オロケタ市の年間平均雨量は1,664mmで、最も雨量が多いのは11月から1月、最も少ないのは4月と5月であり、気温は年間を通じて温暖である。雨量は標高の上昇によって増加し、マリンドン山国立公園を含むドン・ビクトリアノ自治区で非常に多くなる。

### 2.3 地 勢

ラヤワン流域は長く深くそして狭い谷が、マリンダン山のふもとへ向かって側面に刻まれ、その北峰に広がっている。その谷の側面は急勾配で険しいが、底部は比較的平坦である。そこからは西へ向かって丘の多い緩やかな起伏の高原となり、穏やかに上昇している。

### 2.4 人口と統計

オロケタ市はラヤワン流域の主要な中心都市であり、経済的行政的サービスを遠隔地へ供給している。ミアレン（85世帯）は、上流のシブカル（50世帯）、下流のトリヨク（130世帯）とともに重要なバラングイ（自治体）である。

オロケタが、まだミサミス州のバリオであった時代の古い名前は「ラヤワン」で、はぐれた動物の地という意味であった。初期の定住民はボホール地方の巨大な貿易商人であった。後にミサミスが2つの州に分割（オキシデンタルとオリエンタル）された時、ラヤワンはオロケタと改名された。オロケタはついに首都となり、様々な近隣の州から漁業、農業、貿易等のため移住者が流入した。

1987年に市内の13と47のバラングイが都市urbanとして分類され、人口は25,826人と見積もられ、残りの地方ruralの34のバラングイの人口は28,952人であった。人口の40%以上は15歳以下であり、16歳以上の労働者世代は56%。扶養家族率4：1の高い価を示している。

### 2.5 土地利用

ラヤワン流域における土地利用は、4つの主要な部門に分けることができる。

- a) 農業及び耕作地区域は、この流域の32.5%を占める3,230haであり、大部分は東部の低地部と中央部そして谷底に沿った勾配が18%以下の場所に集中している。ココヤシの実が支配的な作物であり、沿岸区域から上流のバラングイにかけての勾配が18%以上で約30%程度(2,940ha)の急な谷に沿って広がっている。その他は大部分が灌木、しだ植物や草地であるが、小さな村落の周辺にコーヒーやフルーツの木もいくらかある。

乾期作水稲の小さな区域は、オロケタ市の付近に集中している。しかし、谷底の

たいていの小さな村落には雨期作水稲の小さな畑が見受けられる。シブカルと呼ばれるバランガイ付近に広がった谷の約 180haは灌漑に適している。とうもろこしはオロケタ川に沿った小さな畑に、ココヤシの下の作物として生育している。また、小村落の上部の新開墾地や時には非常に急勾配な斜面にも見受けられる。

- b) 牧草区域は、流域の約5%の500haに過ぎず、大部分はミアレン東部のシティオシアトグやシティオラリアン周辺の放棄開墾地である。
- c) 灌木区域は流域全てにわたっているが、主にミアレンの上の谷底上部の放棄開墾地に帯状に広がっているのと、タリヨク周辺の谷の側面の玄武岩の下部に生育している。
- d) 森林地帯の多くは二次林であり、急勾配の谷の側面や流域上流の溪谷や峡谷に沿って存在する。面積は流域全体の35.5%を占める3,531haにわたっている。十分に蓄積された古い原生林は、流域上流のシブカル周辺の谷やミアレン下流にいくらか広がっている。タリヨクの木材樹林地は、大部分営利目的でない種々雑多な低木に覆われ面積は26.34%を占める2,623haである。

## 2.6 侵食の現状

土壌侵食が最も多いのは流域中央部であり、シティオシアトグやシティオラリアン周辺の急勾配の放棄開墾地や草地である。また、比較的離れているがミアレン上下流の急峻な峡谷に沿った、小さな開墾畑も同様に侵食が起きている。

流域の大部分を構成する急傾斜の森林が変化するのを保護することは、極めて重要である。侵食は確実に進行し、その下流に再び影響を及ぼす（滞砂、洪水、乾期の水量不足等）。そして社会基盤や他の施設に被害を与え、流域人口を減少させるものと考えられる。

## 2.7 生産資源

ラヤワン流域の天然資源は、大部分次の3つである。

- a) 流域面積の32.5%を占める約2,950haの農地で、傾斜が0~18%の範囲である。オロケタ市の都市中心部に接近した平坦地で、水稲やその他都市に必要な作物の栽培に活用されている。



ココヤシの実は、傾斜3～18%の範囲で最も多く生育している。しかし、フルーツや他の自家用作物（主にコーヒー、カカオ、ランゾーネ等）は、小村落周辺にココヤシの下や間に約10%程度生育されている。残りは大部分「コゴン cogon」や「ハゴノイ hagonoy」である。

- b) 種々雑多な樹木に覆われた草地及び低木地は、生産性は低いが、農業及び植林等開発の可能性の高い区域である。
- c) 流域面積の35%を占める 3,530haの森林区域は、誤った伐採により急激に減少している。その理由としては、森林の利益を受けながらの畑作農民が日常的なこととして伐採を行っていることである。この状況は、コプラの価格低下とココヤシ間の混作拡張、山岳農民の既存技術にも限界があり悪化するものと考えられる。

### 3. 計画の目的

本計画は、フィリピン国ミンダナオ島北西部ラヤワン (Layawan)川流域約 7,000haを対象に農業生産の増大、安定と森林資源の保全を中心とした総合流域開発を計ることにより、フィリピンの地域間所得格差の是正、地域経済開発及び自然環境保護に貢献せんとするものである。

### 4. 計画の概要

本計画は、ラヤワン川流域約 7,000ha内既存農耕地整備 3,230ha、森林復旧及び保全 3,531haを目的に土壌保全対策及び土砂流防止対策工事、崖崩れ対策工事、小規模洪水調整施設建設、末端圃場整備、末端灌漑改修、収穫後処理設備並びに集出荷施設整備、農道整備、橋建設。

### 5. 実施期間及び運営体制

借り入れはフィリピン政府、事業実施機関はDENR（天然資源省）であり、DENRの Project office が Region10 ラヤワン流域開発 Project office と連絡、調整をはかりつつ実施し、完成後は天然資源省（DENR） Region10 office が管理運営する。

リージョン10農村資源運営計画  
(Region10 Regional Community Resource Management Project)

事業の背景

フィリピン国は、都市部と地方農村の所得格差是正を推進する上で特に首都部から遠く離れ、とりたてて産業の少ないミンダナオ島の産業開発を推進中である。中でも農業生産の潜在性が高いリージョン10地方において、地域総合開発計画を推進中である。既にアジア銀の資金援助を受けてM/Pが終了している。フィリピン政府は、本件に関し開発計画に係わる資金源を求めている。

当案件は、地域農村資源保全と生産資源復興により、住民参加型の地域産業振興を促進する事業として計画された。

地区の概要

リージョン10は、フィリピン共和国を構成する12の地方 (Region) の中に属しており、ミンダナオ島の北部に位置している。

計画対象の Region10 地方には、7の市、117の自治体、2,494の部落があり、人口は3,510千人でフィリピン総人口の約6% (1990年センサス) となっている。Region10の土地面積は2,832,774haでミンダナオの約28%を占める面積である。

Region10における土地分類は次の様である。

1. 荒廃地及び未利用地 Alienable and Disposable land	1,074,063.00 ha
2. 森林 Forest land	1,758,711.46 ha
a) 分類不可能	161,445.00 ha
b) 分類可能	1,597,266.46 ha
計	1,758,711.00 ha

A. 森林地帯に於ける被植状況 Vegetative Cover of Forestland

1. 原生林 Virgin / Old growth	171,751.00 ha
2. 再生林 Residual / Young growth	496,170.00 ha

3. マングローブ Mangrove .....	23,624.00 ha
4. 沼又は湿地 Mossy .....	178,900.00 ha
5. 植林地 Forest Plantation .....	55,477.00 ha
6. ヤブ Brushland .....	218,904.00 ha
7. 原野 Openland .....	482,758.00 ha
8. 耕作地 ISF-AFD .....	131,127.00 ha
	計 1,758,711.00 ha

#### B. 荒廃地及び未利用地の現状 Status of A&D Lands

調査済 Surveyed (82%) .....	878,449.54 ha
未調査 Unsurveyed (18%) .....	195,613.46 ha
	計 1,074,063.00 ha

総森林面積に占める二次再生林の割合は約28%で 496,170haである。沼又は湿地が 178,900haで約10%残存している。草地原野は 482,758haで約27%を占め、ヤブが 218,904haで12%という構成である。この地方にとって森林セクターは重要産業であり、その振興が経済的発展と環境保護の面で意義深いものと考えられている。

就労従事人口比率は次の様であるが、山岳居住者が多く、目先の利益を求めてラタンやマングローブ、その他の林産物を無許可で伐採、収穫し同じく無許可で輸送販売しており、森林資源の保護が急務となっている。

自給食糧生産 (季節就労) Subsistence farming .....	63.4 %
専業農家 Permanent agriculture .....	15.8 %
薪炭採取 Fuelwood gathering .....	7.9 %
畜産 (肥育, 飼養) Livestock raising .....	6.3 %
林木業 (伐採業) Logging .....	5.6 %
土木作業 .....	1.0 %

## 事業概要

流域農業基盤の総合整備により、農産物の生産向上をうながし、地域経済振興を計る。具体的には、灌漑、河川改修及び農道・農地整備、集出荷所建設、土砂流防、崖崩れ対策、学校、多目的ビルディング。

事業費概算約40億円。ADBによるマスタープラン終了、本案件も国家開発計画の一環である。

1970年代後半になると、フィリピン国では全国的に山岳地で樹木が消失し、自然大災害が頻発するようになった。1980年代になり植生復興による災害防止と生産性向上を計画しDENRはM/Pを作成した。1989年ADBはミンダナオで当該案件のF/Sを行ったが、リージョン9を先行させリージョン10の予算目処がたたず、フィリピン国は我が国への資金援助を要請している。しかし、プロジェクトは大わくではADB/OECFコファイナンスとして推進する予定である。現在はI/Pを作成し、円借案件にしたいと考えているが、コンポーネントが複雑で円借案件には適応し難く、再調査によりインフラ整備計画の補足が必要と考えられる。

### ミサミスオキシデンタル州農村整備機材計画

(Equipment and Facilities to the Provincial Government Misamis Occidental)

## 事業の背景

フィリピン国は、都市部と地方農村の所得格差是正を推進する上で特に首都部から遠く離れ、とりたてて産業の少ないミンダナオ島の産業開発を推進中である。中でも農業生産の潜在性が高い Misamis Occidental 州で地域総合開発計画を推進中である。既にアジ銀の資金援助を受けてM/Pが終了した。1991年1月に Misamis州は当該案件に係わる無償要請をNEDAに提出し、現在省内を回っている模様である。当案件は地域の生産基盤整備事業の一環として行われるものである。

## 事業概要

流域農業基盤の総合整備により、農産物の生産向上をうながし、地域経済振興を計る。具体的には機材無償である。

総額約3億円、主な機材、ブルドーザ、バックホー、ダンプトラック等である。

事業費概算：約3億円

A D Bによるマスタープラン終了し、D E N RによりF / S終了、要請書は別添の通りである。既に Regional office よりN E D Aへ要請済み。

## 6. 総合所見

計画対象地区のラヤワン流域は、Region10の中で最も開発が立ち遅れている。ミサミスオキシデンタル州の州都オロケタ市の背後に位置していながら、開発の恩恵を殆ど受けていない。一方では、フィリピンにおいても数少ない貴重な原生林が残っているが、産業不振のため年々破壊が進行している。

潜在的な農業生産性は高く、自然環境保護の観点からも地域産業の振興は効果的である。現地オロケタ市も積極的に植林事業等推進するなど意欲的で協力的であり、組織体制もしっかり整備されており、事業推進の実現可能性も高い。従って、自然保護型の農業、林業を中心とした流域総合開発が最も適しており、その実施意義は大きいものと考えられる。

既に実施済みのF / S調査によると、農家財分析では、農家純作物所得が自作農で約10倍、小作農で約6倍となり、大幅な所得増がもたらされるとなっている。本事業を実施した場合と、しなかった場合の純生産額格差経済便益 I R Rは12%である。定性的効果として住及び生産環境の安全性の向上、生産物の市場化促進、地域間における食糧需給の不均衡是正、地域間所得不均衡の是正、農業振興の促進。地域社会活動の円滑化と社会の安定化。熱帯林の破壊防止などである。

社会分野の調査報告書はあるが、地形図、詳細地図などラヤワン流域に関する資料が乏しく、今後F / S調査が必要と考えられる。

計画の妥当性としては、国家開発基本計画(Medium-Term Philippine Development plan 1993-1998)の一環をなす地方開発(Regional Development Project)の中でも特に土地利用を考える上で、生産と環境保全、生産条件整備を目的とした当案件は、地域総合開発計画として事業実施が計画されている。

# 添付資料

## 1. 調査員の略歴

調査員名	経歴
並里次雄	<p>昭和19年2月18日生</p> <p>昭和42年3月 名城大学農学部農学科卒業 昭和54年10月 チュニス大学自然科学部博士課程卒業 理学博士</p> <p>S. 46. 1～S. 49. 3 海外青年協力隊（フィリピン） S. 49. 9～S. 54. 8 JICA専門家（チュニジア） S. 54. 10～S. 56. 9 FAO専門家 S. 57. 9～S. 62. 8 UNDOプロジェクトマネージャー S. 62. 9～現在 (株)建設企画コンサルタント 海外部 農業・水資源部 部長</p>
西川 亨	<p>昭和31年9月22日生</p> <p>昭和56年3月 鳥取大学農学部農業経営学科卒業</p> <p>S. 57. 10～H. 3. 7 (株)日本農業土木コンサルタンツ H. 4. 8～現在 (株)建設企画コンサルタント 海外本部 農業・水資源部 主任技師</p>

## 2. 調査日程

日 程 表						
日数	年月日	曜日	出発地	到着地	宿泊地	備 考
1	4.18	日	成 田	マニラ	マニラ	出国, 移動
2	4.19	月	—	—	マニラ	OECD, 天然資源省
3	4.20	火	マニラ	カヤンデロ	カヤンデロ	移動, 資料収集, 天然資源省地方事務所
4	4.21	水	カヤンデロ	デポログ	デポログ	移 動
5	4.22	木	デポログ	オロケタ	オロケタ	現地調査
6	4.23	金	オロケタ	セ ブ	セ ブ	移動, 資料収集
7	4.24	土	—	—	セ ブ	情報収集
8	4.25	日	セ ブ	マニラ	マニラ	移動
9	4.26	月	—	—	マニラ	JICA, OECD 国家灌漑庁(NIA), 大使館
10	4.27	火	—	—	マニラ	資料収集
11	4.28	水	マニラ	成 田	—	帰国



### 3. 資料収集リスト

プロジェクト当該地区 1 / 50,000地形図

DEPARTMENT OF ENVIROMENT & NATURAL RESOURCES REGION X REGIONAL COMMUNITY  
RESOURCE MANAGEMENT PROJECT FEASIBILITY STUDY / PROJECT PREPARATION FINAL REPORT  
VOLUME I - IV

1992 Philippine Statistical Yearbook

BARANGAY SELF-SUFFICIENCY PROGRAM BY MAYOR ERNIE F. BANDALA OROQUIETA CITY

DENR 1993 Developmental Proposal for Misamis Occidental

REGION-X REGIONAL COMMUNITY RESOURCE MANAGEMENT PROJECT DETALED ECONOMIC AND  
FINANCIAL ANALYSIS TABLES

REGION-X REGIONAL COMMUNITY RESOURCE MANAGEMENT PROJECT BIOPHYSICAL AND SOCIO-EC  
ONOMIC SITUATIONER AND PROPOSED REGIONAL COMMUNITY RESOURCE MANAGEMENT PROJECT  
INTERVENTIONS FOR UPPER PULANGI WATERSHED

STUDIES IN PHILIPPINE POLITICAL ECONOMY

Republic of the Philippines DEPARTMENT OF ENVIRONMENT AND NATURAL RESOURCES  
MASTER PLAN FOR FORESTRY DEVELOPMENT MAIN REPORT

MEDIUM-TERM PHILPPINE DEVELOPMENT PLAN 1987-1992

MEDIUM-TERM PHILPPINE DEVELOPMENT PLAN 1993-1998

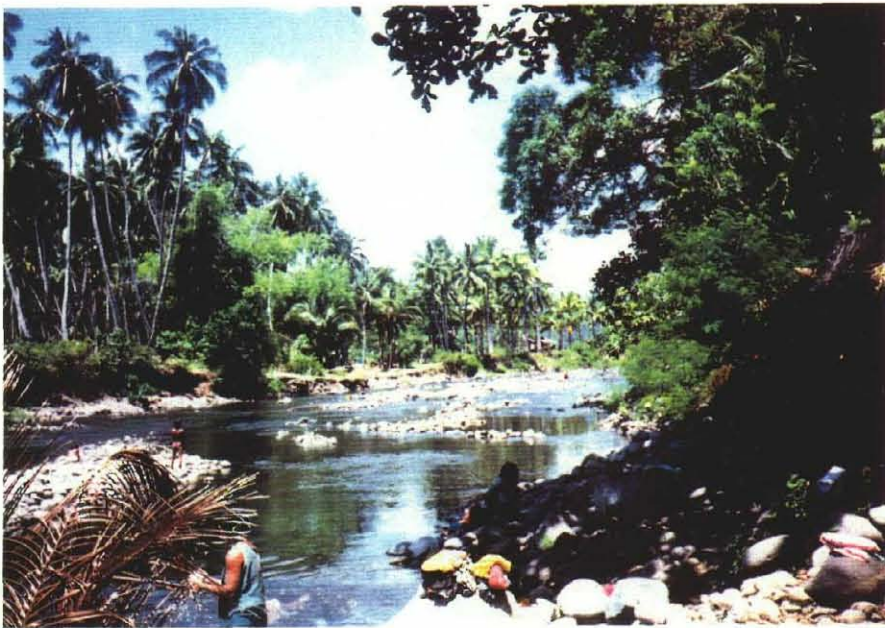
#### 4. 面談者リスト

(氏 名)	( 役 職 )
Mr. Robert S. Jara	Division Chief, Project Development Division, Foreign Assisted and Special Project Office (FASPO)
Dr. Ednardo B. Principe	Project Director, National Forestation Development Office
Edua R. Sarmiento	Assistant Project Manager, National Forestation Development Office
Lourdes Ferrer	Project Development Officer, Office of Undersecretary for Natural Resources Management and Field Operations
Mr. Teotimo M. Redulla	Regional Technical Director (RTD) for Forestry
Mr. Fernando Quililan	Provincial DENR Officer (PENRO), Misamis Occidental Province
Mr. Hermello de los Santos	Community DENR Officer (CENRO), Misamis Occidental Province
Mr. Emerico Conol	Vice Mayor, Oroquieta City
Mr. Benito P. Chiongbian	Governor, Misamis Occidental Province
田 中 英 雄	海外経済協力基金マニラ首席駐在員
田 中 裕	海外経済協力基金マニラ次席駐在員
松 田 祐 吾	在フィリピン日本国大使館一等書記官
石 田 武 士	国家灌漑庁(NIA) 計画部 JICA 専門家
細 野 安 高	国家灌漑庁(NIA) 計画部 JICA 専門家
吉 田 勝 美	国際協力事業団 (JICA) フィリピン事務所農業担当

5. 現地写真



ラヤワン川



ラヤワン川



果樹園（カラマンシー）



苗床

GMERINA



苗床

チーク

和名

双葉柿



苗床

チーク

双葉柿

土地利用状況① (山岳地の焼畑耕作)



151

農道



土地利用状況② (ヤシとコーヒーの混作)



## Request Form for "Development Survey" by the Japanese Government

Name of Project	LAYAWAN WATERSHED MANAGEMENT PROJECT
Requesting Agency	Ministry of Agriculture
Implementing Agency	Department of Environment and Natural Resources

## 1. Contents of the Project

- (1) Purpose and details of the Project (indicate the character of the request; e.g. Master Plan, Feasibility Study, or Detailed Design etc. with attachment of a Map of the Project Site)

Request for Feasibility Study

## 1) Project Background and development objectives

## a. Background

Agriculture is the first and the most important sector in Philippines. This is for national economic establishment and for family economies. For people about 80% are peasants. they make their living by agricultural production, animal raising and fishing. The Government wants to stimulate overall management of natural environment conservation and production in order to attain self-sufficiency in food. The project is designed to involved a great number of small scale farmers in commercial and economic production of vegetables, fruits, crops and other agro-forest production and providing opportunity to the rural population for a better income thereby improving their standard of living. This will help arrest the migration of rural population, especially youth, to urban areas. The activities of the Project also involved in participation of rural women and youth in gainful employment which will further better the income of the family. The Agroforest production are considered to be the most important commodities and increase in their production is essential to meet the growing demands. The project site of Layawan watershed is one of the large amount producing zone of corn. The Government of the Philippines has tried to development with ADB at this area in 1990s, but after then, ADB change the project site to the other region by reason of the project is too much concept for ADB project scale. There after, the project

cannot catch up with the initial target in early 1990s. Present development condition is undergoing and waiting for assistance from outside sources.

This project is the creating and strengthening of a solid production base of agroforest production and diversification of crop and mixed cultivation from corn monoculture.

To satisfy a large extent the great demand for these agroforest in the local market and to supply raw material for the presently high under utilized canning factories. This is in keeping with the importance the Government attaches to its policy diversifying agroforest production, particularly in increasing the production of vegetables, fruit and crops to create more lucrative employment for farmers particularly youth and women, and to improve the diet of the population.

#### B. Immediate Objectives

- 1) The creation of natural resources and watershed management system for agroforest production in the vicinity near big city, by organizing small scale farmers, especially those without lands.
- 2) The establishments of farmer's groups, leading ultimately to a multi-purpose cooperative, which will organize product-selection of farmers, allocation of land, procurement of Inputs, and marketing.
- 3) The on the spot training of farmers including women and youth power, extension staff on the project site, the local training of mechanics and skilled works.
- 4) The setting up of a reasonable sized pilot vegetable farm for improvement of agriculture and forestry productivity in nationwide of Philippines.

This project encompasses a total area of 7,000 hectares and within this, plans are to construct a model farm for vegetable cultivation.

With each model farm area of 100-200 hectares, equipment will be installed. Vegetable, tree, crop seedling production and commercial base vegetable, crops, tree cultivation will be put into cultivation.

### Basic Concept of Model Farm Construction

The aim of this project can generally be focused on the following two points.

- 1) To expand and intensify production bases for vegetable, fruit, tree and crop for the local and export market and canning factories.
- 2) In line with the national policy of diversification of agricultural production, by increasing total agriforest production, nutritionally quality will be improved while creating job opportunities for the youth and women market.

This project, by having various farmers participate in the economically sound production of agriculture, not only their living standards bettered but it also stems the flow of people (especially among the young) to the cities.

As such, this project must be considered from the standpoint of participation by the youth and female labour market while at the same time increasing agriculture and forestry production by the implementation of this project. As basic concepts for implementing this project, planning with actual emphasis on the following five points is desired.

To establish water shed management in Layawan which is the outlying district of Oroqueta, a large scale of up-to-date model center for constant of agroforest production in these areas by organizing landless small farmers.

Spreading of modern agriculture through rainwater or mechanical irrigation by adopting the production techniques of the fruit tree and vegetable production development project which partly were successful in the Philippines.



Ultimately, a multipurpose farming group and cooperative union will be established in order to carry out agricultural and forest production, land allotment, procurement of agricultural and forest equipment and materials, sales, etc.

For the project, conduct training for the farmers, that will be spreading agriculture but also but also local technicians and skilled workers.

Construction of an all-around model farm which includes a fruits, trees and marketable tropical flower garden and processing facilities.

### C. Outline of Cultivation Project

For the execution of this project, the Ministry of Agriculture and the section in charge which will be the nucleus of this extension will provide the accommodations for implementation and particularly for the training and the activities involved in spreading technology by the officers of the farms who will be the pivot for promotion of vegetable, fruit, trees, it is desirable to carry on the work with the cooperation of DENR and the provincial and city government.

For the present cultivation project, in consideration of the 4-year period crop rotation system, plans are to utilize four (4) separated plot and 100-200 hectares each, the total area of 7,000 in the following manner.

- 1) agroforest ( which includes production of fruits & trees)
- 2) forest
- 3) agropastural
- 4) agriculture and fishery

For the start of this project rainwater irrigation will be relied on for the 100 ~ 200 hectares but will be converted to mechanical irrigation for the future.

At the 100 ~ 200 hectare model farm, irrigation facilities are to be installed and seed production and cultivation will be carried out and distribution of superior seeds on the 4,000 hectares, cultivation test for new crops and widespread use of cultivation techniques for stable production shall be incorporated.

1. Members of the Study Team

- (1) Agrosociologist
- (2) Irrigation Engineer
- (3) Agronomist
- (4) Hydro-agronomist
- (5) Agro mechanical engineer
- (6) Project Team Leader

2. Duration of the Study

The Tentative work schedule is shown in the attached figure. It is scheduled that all works will be finished in 12 months. Preparation of the final report will be completed in two (2) months after receiving the comments from the Government on draft final report.

3. Scope of Works

The scope of works for the study will be broadly divided into the following two (2) items.

Work - I : Work for the whole project including data collection, field survey and establishment of basic project component.

Work - II: Topographical mapping, data collection and field survey, and analysis of the survey result and preparation of the feasibility study report.

On-the-job training of the Government officials shall be carried out through Work-1 and Work-II. Each of Work-I and Work-II will consist of the following work items:

## Work I

To collect and review the existing data and information relevant to the study on the following items:

Topography

Meteorology and available water

Soils

Vegetation

Agriculture ecosystem

Forest Agro-economy and institution including marketing

Land use

Irrigation and drainage data collection

Infrastructure

Regional and national development plans relevant to agriculture sector

To carry out field survey and investigations on the following items:

Ecosystem

Soils, land use and land suitability

Meteorological investigation

Agricultural survey including present farming practice and production

Agro-economic and institutional survey

Regional economic and marketing survey

Construction materials and cost survey

To establish basic concepts for the project,

Demarcation of the project area(s)

Outline of the proposed agricultural and forestry development plan

Basic plan of major infrastructure

Strategy for implementation

To execute transfer of knowledge

## Work II

Field survey and investigation, and analyze the results,

Delineation of the project area

Topographical mapping of the area

Data collection, field survey

Agroforest production planning

Layout of the project

Formulation of agricultural and forest development plan including infrastructure and marketing facilities

Establishment of implementation plan and schedule

Benefit and cost estimate, and

Economic Evaluation

To prepare the feasibility study report

Schedule of the Study

The period required for the study is estimated at 15 months in total. A tentative schedule is presented as follows:

4. a) Estimate cost of the Project
  - b) Prospects of budget allocation for the Project
  - c) Management and operation of the Project  
Project will be longing M/A
- 
5. a) Reason of the request of the Project in the past initial plan in 1978. After then facility was done.
  - b) Has aid request been made for the Project to other countries or international organizations?  
None

6. If other countries or international organizations have extended assistance to similar projects, outline the projects.
7. Availability, kind and content of ready-made information material of the circumstances of the Project (e.g. topographical map, meteorological data etc.)

Please refer to the attached terms of reference.

II. Indicate the following if the Project constitutes part of a National level economic development plan

1. Name of the National Development Plan  
1993 -1998

2. Purpose and contents of the National Development Plan

- 1) The Government wants to stimulate overall natural resources conservation and food production in order to attain self-sufficiency; providing opportunity to the rural population for a better income thereby improving their standard of living. This will help arrest the migration of rural population, especially youth to urban areas. The activities of the Project also involve participation of rural women and youth in gainful employment which will further better the income of the family.
- 2) The agriculture and forest production are considered to be the most important commodities and increase their production is essential to meet the growing demands.

This project supporting the National Plan are as follows:

The establishment of farmer's groups, leading ultimately to a multipurpose cooperative, which will organize product-selection of farmers, allocation of land, procurement of inputs etc. and marketing.

The on the spot training of farmers include women and the youth power, extension of staff on the project site, the local training of mechanics and skilled workers.

The setting up of a reasonable sized pilot farm for improvement of agriculture and forestry productivity in Philippines.

3) Prospective time and period of the implementation of the National Development Plan

Study - 1994

Implementation - 1995

4) Status of the Project in the National Development Plan

PIP 1993 - 1998

5) If aids have been extended to the National Development Plan by other countries or international organization in the form of capital cooperation or technical cooperation, outline the aids.

英文要請書 (案) ②

THE APPLICATION FOR JAPAN'S GRANT IN AID

Applicant: The Provincial Government of Misamis Occidental Republic of the Philippines  
Project Title: Equipment and Facilities to the Provincial Government of Misamis Occidental

Economic Sector:  
Project Type: Equipment and Facilities Supply

Total Project Cost:  
Implementing Agency: The Provincial Government of Misamis Occidental (Agency In Charge of the Project)

Responsible Ministry: National (Ministry Requesting the aid) Economic & Development Authority (NEDA)

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I. PROJECT DESCRIPTION:

1. Background

1.1 CURRENT SITUATION:

The Province of Misamis Occidental has only a total land area of 196,000 hectares. Out of which, about 53,000 hectares has been proclaimed as National Park and Watershed Reservation. This reservation used to yield sufficient volume of water for domestic and agricultural uses for the entire province of Misamis Occidental and part of Zamboanga del Sur and Zamboanga del Norte when its forest vegetation was still intact. In other words, the reservation play a vital role in the economic and ecological condition of the three (3) provinces.

Before the proclamation of Mt. Malindang into National Park and Watershed Reservation, there were three (3) logging companies operating in the area namely Luga and Sons, Inc. Maderero de Misamis Co., and Mt. Ampiro Timber Co. during that time the old growth dipterocarp forest was about 50,000 hectares and second growth forest about 10,000 hectares. This areas were well-protected by the concesssion forest guards of the timber licensees and the forest rangers of the National Forestry Agency.

Forest protection work has then effective because the companies provide service vehicles for mobility and fire arms for some of the Concession Guards. Destruction of forest were minimal due to the logging operation but the area were reforested and some naturally regenerated after the logging.

After the enactment of Republic Act 6266 in 1975 which proclaimed Mt. Malindang in Misamis Occidental as National Park and Watershed Reservation, the timber licenses were cancelled and logging operations stopped in 1981. Hundreds of workers were left jobless in the area. The forest protection activity of the area was left to the few immobile and low-ly paid forest rangers of the Bureau of Forest Development. The condition of the area suddenly turned to worse when the former workers of the timber companies resorted to kaingin making and illegal cutting of timber. The rate of forest destruction was accelerated beyond the capability of the forestry agency to suppress. The condition was further worsen due to the breakdown of the peace and order condition in the areas. As a result about 50% of the old growth forest was destroyed. More rivers which was used to flow abundant water became intermitent or totally dried up. Flash flood due to over land flow, soil erosion and landslide usually strike during rainy season destroying properties and even lives in the lowlands while drought take its toll during dry months. Life then became hard for more people in the province as their livelihood sources in the lowlands were adversely affected by sedimentation brought by floods and the destructive effects of drought.

#### 1.2 PROBLEMS TO BE SOLVED IN THE SECTOR:

Having recognized the role played in Mt. Malindang National Park and Watershed Reservation in the economic and ecological condition of Misamis Occidental and part of Zamboanga del Sur and Zamboanga del Norte. The Provincial Officials as well as the forestry agency in the province have taken measures to preserve the remaining forest vegetation and regenerate the denuded portions of the reservation. But the steps undertaken were slow and less effective due to lack or absence of road, lack of equipments that will be used in hauling seedlings and materials for the reforestation projects and vehicles that



will be used in monitoring and forest patrol works. At present both the provincial in this province or the national government is incapable of purchasing the needed equipments for road constructions, speedy reforestation and effective monitoring and forest protection patrol works.

Granting of equipments with built-in component such as buildings to the province of Misamis Occidental will solve the dearth of the needed equipments and buildings relative to its reforestation and agro-forestry projects.

### 1.3 NECESSITY AND IMPORTANCE OF IMPROVEMENT IN THE SECTOR:

The condition of the reservation at present is so alarming which needs urgent measures to prevent further destruction of its remaining forest vegetation and deterioration of the watershed due to erosion and landslide. The provision of equipments and the needed building component of the Province of Misamis Occidental is very important to improve the service and capability of the provincial government. With this move of the province, the equipments and vehicles requested through grant are very important for the following activities; to wit:

- A. Construction of road network necessary for effective project implementation and monitoring especially access road in the plantation site which is indispensable in hauling of seedlings, supplies and materials.
- B. Large scale production of seedlings by the province in different reforestation sites.
- C. Plantation establishment activities such as brushing of hedges, bushes and unnecessary wildlings, including plowing of land.
- D. Protection and maintenance activities such as weeding and brushing, hauling of fertilizers, cutting of unnecessary shed trees and control of insect pest and diseases.
- E. Regular forest protection patrol and monitoring of the projects.

### 1.4 RELATION BETWEEN THE SECTOR AND THE PROJECT

The desire to speed up the regeneration of the denuded portion of the reservation and effectively protect and preserve its remaining forest vegetation, needs equipments for the construction of access roads, production of seedlings, plantation establishment and maintenance and protection of plantation. Jeeps and motorcycles are likewise needed for effective monitoring and patrol works.

1.5 REASONS WHY JAPAN'S GRANT AID IS REQUESTED FOR THIS PROJECT:

With the passage of the Local Code and its eventual implementation, local governments play an important role in the rehabilitation and conservation of our natural resources in their respective areas of responsibility. This province has wide tract of barren and denuded forest lands that need immediate attention. Considering that the national government and this province has no funds for this purpose, we must have to seek the help of donor countries like Japan. To further delay this will bring about untold miseries and sufferings not only to this locality but to adjacent areas in the forms of flash floods, soil erosion, siltation, drought, pollution and other environmental calamities.

II. OBJECTIVES OF THE PROJECT:

1. Short-term Objectives

- a.) To construct access road network, forest nurseries, camp sites, plantation sites, check points, lookout towers, dams and other infrastructures;
- b.) To raise seedlings of fast-growing tree species for reforestation of identified sites;
- c.) To contain shifting cultivators or kaingineros thru the practice of agro-forestry;
- d.) To provide employment opportunities to forest occupants, upland farmers and other residents;
- e.) To establish forest patrol sectors to monitor, detect and apprehend violators of forestry rules and regulations;
- f.) To minimize if not totally stop illegal cutting of forest products within the reservation.

2. Medium and Long Term Objectives:

- a.) To enhance the reforestation capability of the province.
- b.) To have functional and responsive equipment pool for use in all aspects of reforestation activities.
- c.) To provide reforestation contract workers or hillside dwellers self-sustaining livelihood projects that will enable them to become self-reliant.
- d.) To extend the services of its equipment to other sectors provided their activities are environmentally protective.

3. Please fully describe the relations between the project and objectives and how the project will contribute to the accomplishment of the objectives.

The project will solve the dearth of equipment and other facilities, limited and laggard mobility of the fieldworkers to and from the plantation site. The project will further enable the province to expand its services in all its municipalities. In addition, these equipments will facilitate the construction of road network, water impounding dams, production of seedlings, plantation establishment, protection and maintenance, management and extension works, ranging and protection against forest fires and silvicultural practices.

In addition further, the project will augment the snail-pace activities of the national government to restore and improve the ecological balance of the province. The trend of forest destruction has been outpacing the governments efforts to rehabilitate and conserve the reservation. The goal for immediate restoration of the ecological balance can be realized faster if we have sufficient personnel, funds and equipment/facilities.

II-A. OUTLINE OF THE PROJECT:

1. Scope of the Project

a. Building

<u>Required (support)</u>	<u>Required Quantity</u>
Administration building	1 unit
Garage/motor pool	1 unit
Water facilities	3 units

b. Equipment

Crawler type Tractor (Duzzer)	
D 65 Kumatso	5 units
Wheel type tractor S 4T	3 units
Dump truck 10 tonner	10 units
Stake truck	5 units
4 wheel drive jeep 2,600 cc	6 units
Portable water pump with generating se 10 kw.	5 units
Chainsaw 60 cc	4 units
Bush cutter	10 units
Honda motorcycle 125 cc	30 units
Grader LG 2H	2 units

Prime Mover w/ low bed trailer	1 unit
Road compactor (sakai)	2 units
Back hoe 3/4 cu. yard crawler type	2 units
Back hoe wheel type	2 units
Fire truck	3 units
Telescope	5 units
Abney hand level	3 units
Propagation chamber	3 units
Base radio 45 watts transceiver (VHF)	2 units
Hand held radio portable	50 units
Air conditioning units	2 units
Computer machine	2 units
Survey instruments	2 sets
2 transit	
2 level	
VHS	2 sets
TV set 24 inc.	2 units
Video camera	3 units
Slide projector	3 units

c. Purpose of the Equipment

Crawler type tractor - for construction of access road, water impounding structure and fire break establishments.

4 Wheel Drive Jeep - for management, monitoring and evaluation of project.

Wheel type tractor S 4T - for land tillage site/preparation. Seedling production. For hauling of seedlings, supplies and materials within the project site.

Dump truck - for hauling sand and gravel needed in roads and nursery construction and garden soil for seedling production.

Truck GT - for transportation of supplies and materials and workers from urban areas to the various project site.

Portable water pump - for maintenance of seedlings in nursery and new transplant in plantation area.

Chainsaw - for land clearing, cutting weed, trees, silvicultural treatments.

Bush cutter - for weeding and brushing.

Motorcycle - for forest protection patrol and extension work.

Grader LG - road shoulder scraping/leveling.

Prime mover - for transporting crawler type tractor.

Road compactor - for soil compaction.

Back hoe - for digging canals and imburnals.

Fire truck - putting off forest fire.

Telescope - for monitoring/viewing.

Abney hand level - for measurement of slopes and tree heights.

Radio base, Hand held radio - for communication.  
 Air conditioning units - for office ventilation.  
 Computer machine, VHS, TV sets. video camera-  
 and slide projector - for documentation.  
 Survey Instruments - for surveying

2. Cost Estimates:

The cost of the project is estimates as follows:

Equipment/tools,instruments - - - -	P 71,478,000.00
Building including motorpool & garage - - - - - - - - - - - - - -	18,000,000.00
	<hr/>
TOTAL - - - -	-P 89,478,000.00

Benefit, Effect and Publicity of the Project:

(1) Population that will benefit directly from the project.

Local residents both from the lowlands and uplands will be hired as workers and laborers are the immediate beneficiaries. The project will also employ jobless foresters, agriculturists, engineers, and other professionals. Access roads passing thru private lands can be used as farms to market roads, hence farmers easily bring their products to market. These access roads will encourage farmers to develop their idle lands and therefore will increase their income. With this progress being introduced by the government in the hinterlands, dissidents may be encouraged to return to the folds of the government thereby solving the rebel problem in the community.

(2) Population that will benefit from the project:

Once the watershed is fully restored and covered with verdant and luxuriant vegetation there will be enhancement or more or less even distribution of fresh and clear water supply that will benefit the lowland farmers. Flash floods, erosion, siltation and pollution will be minimized, if not totally stopped. Fishpond areas will have sufficient supply of clean, fresh and pollution-free water that is healthful to the growth of fish, prawns, crabs, shrimps and other marine life resulting in abundant harvests for export and local consumption. The province and neighboring towns will experience good fresh air with invigorating climate. With the beautification of the landscape, people will enjoy the different recreational activities such as mountain climbing, camping, nature observing, bird watching and others. Therefore the general impact is the overall upliftment and enjoyment of the citizenry.

(3) Area that will benefit from the project:

There will be four (4) provinces that will be benefited by the project. These are the wholesome province of Misamis Occidental, five (5) municipalities of Zamboanga del Sur, 6 municipalities of Zamboanga del Norte and five (5) municipalities of Lanao del Norte, within approximate total area of 325,000 has. These places derive benefits either directly or indirectly thru the water supply coming from the watershed of Mount Malindang.

(4) Economic and Social Effects of the Project:

(i) Current Situation

Nationwide, hard evidence of environmental disturbances is taking place due to the high rate of deforestation. This is very alarming to the extent that we are in the thresgold of national environmental disaster. The rate of deforestation in this country has been recorded as follows:

<u>Year</u>	<u>Forest Cover</u>
Before 1959	- 30.0 Million hectares
In 1969	- 12.0 Million hectares
In 1976	- 9.0 Million hectares
In 1987	- 6.0 Million hectares
In 1989	- 1.5 Million hectares
In 1990	- 0.98 Million hectares

As a consequence, the country's forest cover is almost gone. Alarming signs of ecological imbalance have been experienced at Ormoc City last year (1992) due to flash floods wherein scores of human lives and million of pesos worth of properties were lost, not counting the untold miseries and suffering inflicted to the residents. And lately, the province of Davao del Sur and Agusan del Norte suffered the same catastrophe. Annually, drought is occuring in almost all regions of the country, due to the lost of forest cover.

The forest cover of Misamis Occidental is 10,000 hectares or only 5.76% of its total land area. It is far below the necessary balance of forest cover of 42%. This remaining forest is still fast disappearing, outpacing the rate of reforestation being undertaken by the government. If the rate of forest destruction can not be arrested the

whole of Mount Malindang especially the National Park and Watershed area will become so degraded so that it will become irreparable.

The purpose of this project is to repair the damage done to the reservation, stop further destruction in order to prevent future occurrences of calamities and save the environment. We want the future generations of Filipinos to enjoy the same bounty as their forefathers. We should be reminded of the words of the late President Manuel L. Quezon when he said that a nation without forest faces a hopeless future. We don't want this bleak and hopeless future to happen to this province. The earlier this project is started, the better for all of us. This province deserves just attention.

Presently, with the combine efforts of the Department of Environment and Natural Resources (DENR) and NGO's about 528 hectares could only be effectively reforested with the use of conventional tools/devices. Since the province has 20,000 hectares of denuded land it would take almost 25 years before the entire area could be fully covered or reforested. Therefore, the need for the province to multiply its efforts by so much number of times is imperative.

By using the needed equipment, reforestation cost and facilities, 1050 hectares of reforestation and agroforestry projects can be accomplished by the province in 3 years. The tasks to reforest 10,000 hectares in 5 years requires the construction of about 500 kilometers access road to the various reforestation sites. This can only be done with the use of the needed equipment mentioned hereof.

Since the top priority project of the Province is the improvement of the degraded environment, particularly the rehabilitation, development and conservation of Mt. Malindang National Park and Watershed Reservation, the incumbent government of Misamis Occidental will allocate funds for the operating and maintenance of these equipment.

(ii) Expected Effect of the Project:

The consumation of the project will provide prosperity, enjoyment and healthful living in the region. Natural calamities brought about by environmental degradation will be minimized if not totally stopped. People will become aware that the forest is much more important than just the source of building materials. That it is a big mistake of destroying one's forest resources. They will become more cooperative in conserving and planting trees. They will no longer regard the forest as a hindrance to but as an aid to agriculture. They will soon discover and realize the fact that to bring back forest cover needs a lot of money, time and efforts and even sacrifice. And therefore, the people will become more forestry conscious in the long run.

(5) Publicity:

Once the developmental activities of the project starts, it will be like a stone thrown into the water that creates big waves that will reverberate thru the entire province and even beyond its borders to the adjacent provinces of Zamboanga del Sur and del Norte and Lanao del Norte with a combine population of 679,375 people. This is so because of the magnitude of the employment opportunities that it will create. Perhaps even people from beyond these provinces may seek employment with the project especially those professionals who are not readily available locally.

IV. REQUEST TO OTHER DONORS

Not applicable

V. PRIORITY

So far this is the only top priority project of the Provincial Government being requested from Japan.



VI. MINISTRY AND AGENCY IN CHARGE OF THE PROJECT

1. Outline of the implementing agency:

(i) Organizational Chart of the Agency (Please see annexes hereby attached re structures)

(ii) Authorities and Duties of the Agency.

Based on the Memorandum of Agreement signed by the reforestation project of the province ... became a law with built in purpose.

The duties of the Provincial Environment and Natural Resources (DENR) Projects Board are the following:

- a. It is the policy making and planning body.
- b. It is tasked to create a management office whose function is to undertake. Manage and supervised the reforestation and agro-forestry project of the province.
- c. It is tasked to appoint members of the project staff.

On the other hand, these equipment will be absorbed by the Provincial Engineers Office who will do all the technical supervision, including the operations and maintenance which have funding allocation from the Provincial Government of Misamis Occidental.

(iii) Personnel

The personnel involved in this agency are the following:

Office of the Governor - - - - -	9
DENR Project Board - - - - -	4
Grass Root Level Officials - -	<u>130</u>
	143

(iv) Budget: Personnel Services - \$ 363,281

VII. PREPARATION

1) a. Address of the site

FOR THE EQUIPMENT  
PROVINCE'S MOTOR POOL  
CAPITOL COMPOUND, OROQUIETA CITY  
MISAMIS OCCIDENTAL, PHILIPPINES.

b. Total Area of the site

THREE (3) HECTARES

Note: The reforestation and agroforestry projects are located in five (5) municipalities.

When it comes to the technical capability of the province and its implementing arm to handle these needed equipments, there are more than enough drivers, operators and mechanics that the province (represented herein by the Provincial Engineers Office) can muster for the operation, maintenance and repair of these equipments. On the other hand, funding to this effect shall be the responsibility of the province. This has been defined by both parties with reference to the end-users of these equipment.

This project shall generate employment in the countryside, since these equipment need operators who in turn need assistance and ordinary laborers. These equipments shall be used in constructing access road and road network inside the plantation.

4. WORK PLAN/PROGRAM

Project	Year				
	1994	1995	1996	1997	1998
A. Base line/technical survey					
B. Land preparation, construction of facilities such as offices, roads, nurseries, garage, etc.					
C. Seedlings production, plantation establishment & Maintenance, replanting & agroforestry					
D. Silvicultural treatment					
E. Monitoring & extension work					
F. Forest Protection & thinning					

IX. OPERATION AND MANAGEMENT OF THE PROJECT:

(1) Personnel:

	<u>Current</u>	<u>To be employed</u>
Office of the Governor (advisory)	5	as needed
DENR (Supervision)	3	as needed
Grass root (Directly responsible personnel)	130	as needed

Attached Herewith are ANNEXES A, B, C, D, E, & F

ANNEX A - Misamis Occidental Provincial  
Government Organizational Structures

ANNEX B - Provincial Government Reforestation  
Project Organizational Structure  
(Showing line of Authority, Flow  
Function and Line of Linkages)

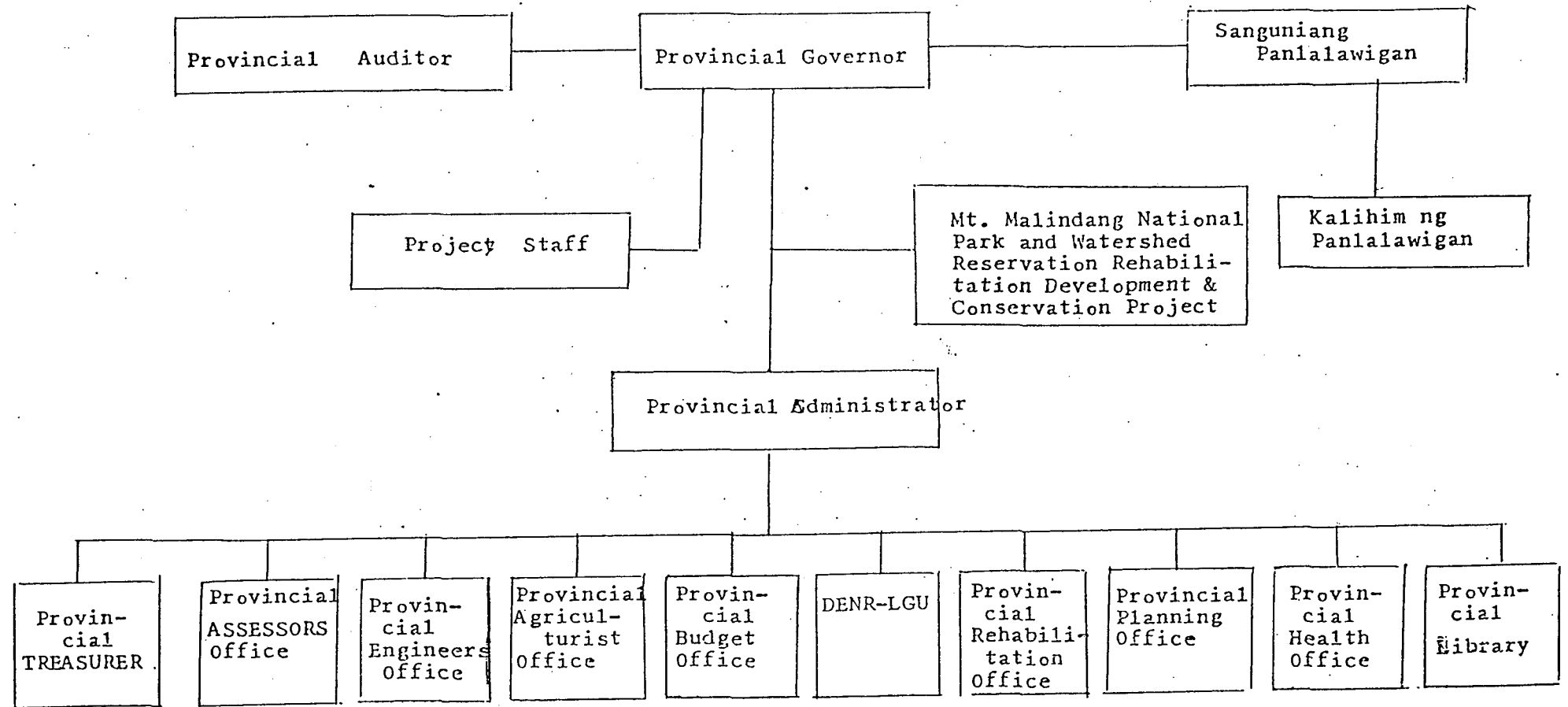
ANNEX C - Monitoring and Evaluation Network  
Re Reforestation and Agro-Forestry  
Projects of the Province under the  
Provincial Government Reforestation  
Project.

ANNEX D - Memorandum of Agreement (MOA)  
between the Department of Environment  
and Natural Resources (DENR) and the  
The Provincial Government of Misamis  
Occidental

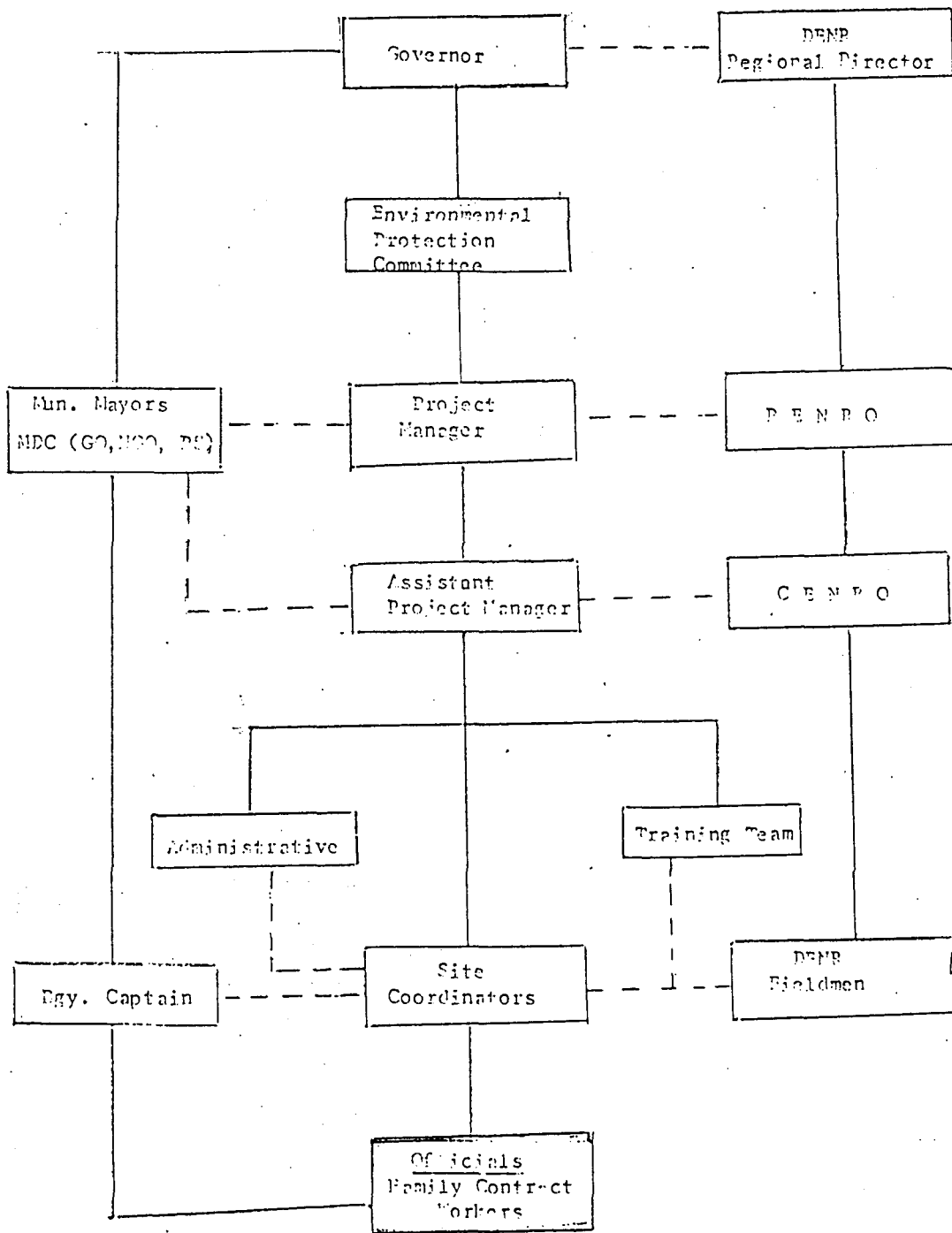
ANNEX E - Maps (Current Reforestation and  
Proposed Reforestation sites)

ANNEX F - Attachment B - NEDA FORM 101

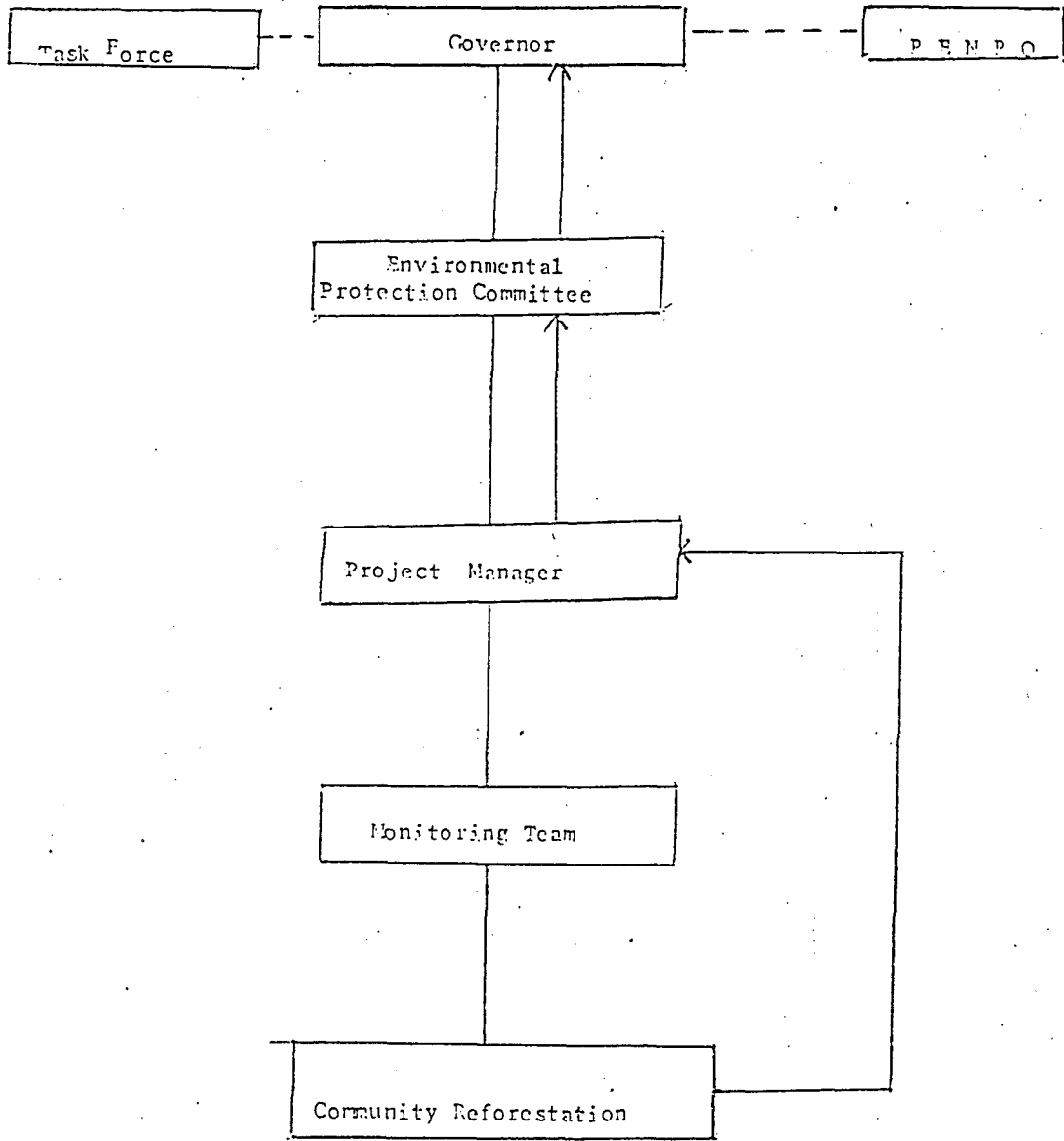
MISAMIS OCCIDENTAL PROVINCIAL GOVERNMENT



ORGANIZATIONAL STRUCTURE  
 (Line of Authority, Flow, Function and Line of Linkages)



MONITORING AND EVALUATION  
RE-FORESTATION / JEP AGRO-FORESTRY  
PROJECT OF THE PROVINCE



Composition of Monitoring and Evaluation Team

Chairmen: \_\_\_\_\_

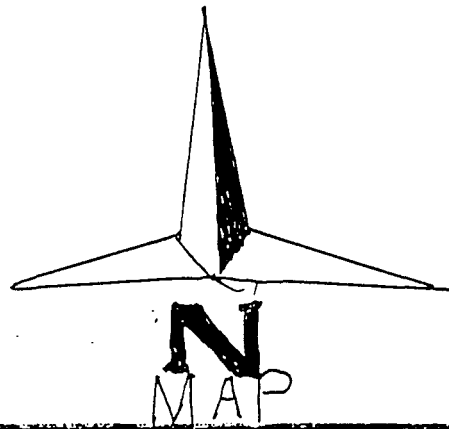
Members : \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Built-In Monitoring Team of the Province

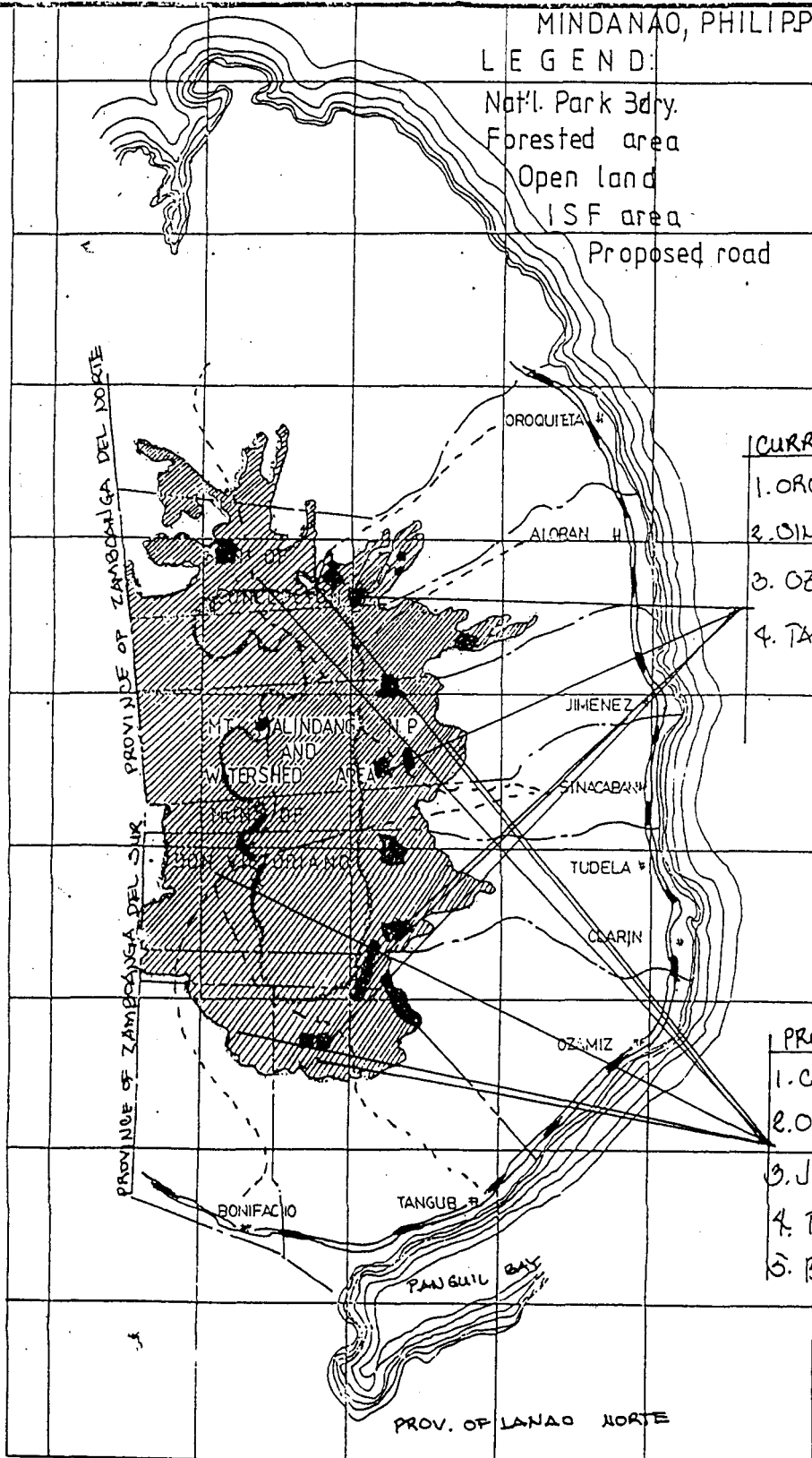


PROVINCE OF MISAMIS OCCIDENTAL

MINDANAO, PHILIPPINES

LEGEND:

- Nat'l. Park Bdry.
- Forested area
- Open land
- ISF area
- Proposed road



CURRENT REFO PROJECTS

1. OROQUIETA	-	140 HA.
2. DINACABAN	-	45 "
3. OZAMIZ	-	323 "
4. TANGUB	-	50
		528 HAS.

PROPOSED REFO SITES

1. CONCEPTION	-	350 HA.
2. OROQUIETA	-	100 "
3. JIMENEZ	-	150 "
4. TANGUB	-	350 "
5. BONIFACIO	-	100 "
		1,050 HAS.

Annex "F"

These equipment will be absorbed by the Provincial Engineer's Office and will be located in the Provincial Engineer's Motor Pool, Capitol Compound, Oroquieta City.

These equipment and facilities are necessary to speed up the reforestation and agroforestry projects of the Province of Misamis Occidental involving an area of 1,050 hectares in three (3) years.

The task to reforest 1,050 hectares in 3 years requires the construction of about 500 kilometers access road to the various reforestation sites. This can only be done with the use of the needed equipment mentioned hereof.

Since the top priority project of the Province is the improvement of the degraded environment, particularly the development and conservation of the forest ecosystem, the incumbent government of the Province of Misamis Occidental will allocate the amount needed for the operations and maintenance of these equipment.

This is a package of equipment which is given in the form of Grant In-Aid by the Government of Japan to other countries as support for their (countries given these equipment) reforestation and nursery projects.

Purpose of these Equipment:

<u>Equipment</u>	<u>Purpose</u>
Crawler type tractor	- for construction of access road, water impounding structure and fire break establishments.
4 Wheel Drive Jeep	- for management, monitoring and evaluation of project.
Wheel type tractor S4T	- for land tillage site/preparation. Seedling production. For hauling of seedlings, supplies and materials within the project site.



Annex "F"

Dump truck	- for hauling sand and gravel needed in roads and nursery construction and garden soil for seedling production.
Truck GT	- for transportation of supplies and materials and workers from urban areas to the various project site.
Portable water pump	- for maintenance of seedlings in nursery and new transplant in plantation area.
Chainsaw	- for land clearing, cutting weed trees, silvicultural treatments.
Bush Cutter	- for weeding and brushing.
Motorcycle	- for forest protection patrol and extension work.
Grader LG	- road shoulder scrapping/leveling.
Prime Mover	- for transporting crawler type tractor.
Road compactor	- for soil compaction.
Back hoe	- for digging canals and imburnals.
Fire truck	- putting off forest fire.
Telescope	- for monitoring/viewing
Abney hand level	- for measurement of slopes and tree heights.
Radio Base, hand held radio	- for communication.
Air conditioning units	- for office ventilation.
Computer machine, VHS, TV sets, video Camera and Slide Projector	- for documentation.
Survey Instruments	- for surveying.

VI. Project Cost Estimates and Financing Plan (at constant prices)

Base Year: 1993

A. Financial Requirements:  
(Indicate regional breakdown of annual requirements)

Total Project Cost 1/ (in P)	. . . P 89,478,000.00
Local Cost (in P)	
Foreign Exchange Cost	. . . . . \$ 3,807,574.468
	(in US \$)

B. Funding

GOP Counterpart 2/ (in P) . . . Not applicable  
 Loan/Grant Proceeds (Operations and  
 (in US \$) maintenance of  
 these equipment  
 will have  
 allocation from  
 the province.)

Domestic Loan/Borrowing \_\_\_\_\_  
 (in P) NOT APPLICABLE

1/ Inclusive of Physical contingencies

2/ refers to counterpart fund provisions in  
 the budget for national government projects  
 and corporate funds for projects of  
 national government corporations.

VII. IMPLEMENTATION SCHEDULE/WORK PLAN

This portion should include the time phasing of major  
 project components (as in Ghant chart)

Planned Period of Project \_\_\_\_\_  
 Y E A R S

Implementation:	1994	1995	1996	1997	1998
_____					

Project Implementation  
 Schedule

- A. Baseline survey \_\_\_\_\_
- B. Land preparation, construction  
 of facilities such as office,  
 roads, nurseries, garage, etc. \_\_\_\_\_
- C. Seedling production, plantation  
 establishment and maintenance,  
 replanting and agro-forestry. \_\_\_\_\_
- D. Silvicultural treatment \_\_\_\_\_
- E. Monitoring and extension work \_\_\_\_\_
- F. Forest protection and thinning \_\_\_\_\_

VIII. STATUS OF PREPARATION (As of March 1993)

- \_\_\_\_\_ Project concept has been formulated.
- \_\_\_\_\_ Project pre-ES to be undertaken in \_\_\_\_\_
- \_\_\_\_\_ Project ES is proposed to be undertaken in \_\_\_\_\_  
 Project proposal/concept ready
- \_\_\_\_\_ Project ES or DE updating is currently being  
 undertaken and will be completed in \_\_\_\_\_

Presently, the prevailing situations of lack of equipment, bad roads, no access road leading to the reforestation sites and no forest cover all of these are inter-related factors as to why the current drought is hitting hard the province without let-up for the past 6 months.

Hopefully, with the needed equipment this will redound to the total restoration/rehabilitation of denuded areas. Ten years from now with verdant trees growing on the mountains, there will be:

1. Sound environment because of ecological balance.
2. Economic prosperity because of employment that well maintained forest creates, more income generating activities, abundant food supply, water teeming with fish and forest with wildlife.
3. Healthy people because of fresh-clean air and water.
4. Abundant supply of fuel wood for home-use and local industries.

Prepared by:

EDDY C. CAYLAN

and

DANIEL R. AGUIRRE, JR. Designation: CDA

Office : DENR - LGU Telephone No: \_\_\_\_\_

Prov'l Governor's Office, Mis. Off.

Date Submitted: April 1993