南太平洋プロジェクトファインディング
(ミクロネシア連邦、マーシャル諸島共和国)
調査報告書

昭和58年9月

国際協力事業団

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はしがき

南太平洋のミクロネシア諸島は，旧くは我国の信託統治下にあり，また，第二次世界大戦の後は，国連の信託統治領としてのアメリカの施政権の下にあった。現在では，近く独立を控え４つの地域に分れている。このうちパラオのコロールにおいては，１９７８年から１９８１年の間ＪＩＣＡにより経一本釣の技術協力が行われていた。また，この地域は我国の遠・鮮漁業にとって重要な漁場を含むところであり，我国が水産分野に於いて適切な技術協力を行い，ミクロネシア諸島諸国との友好関係を保持することは，極めて重要なことである。ここにＪＩＣＡでは，技術協力を行う可能性の高いミクロネシア連邦とマーシャル諸島共和国に昭和５１年１２月１３日より１２月２４日の間農林水産省統計情報部水産統計課古川有恒課長補佐を団長とする調査団を派遣して，プロジェクトタイプの技術協力の可能性について調査を行った。

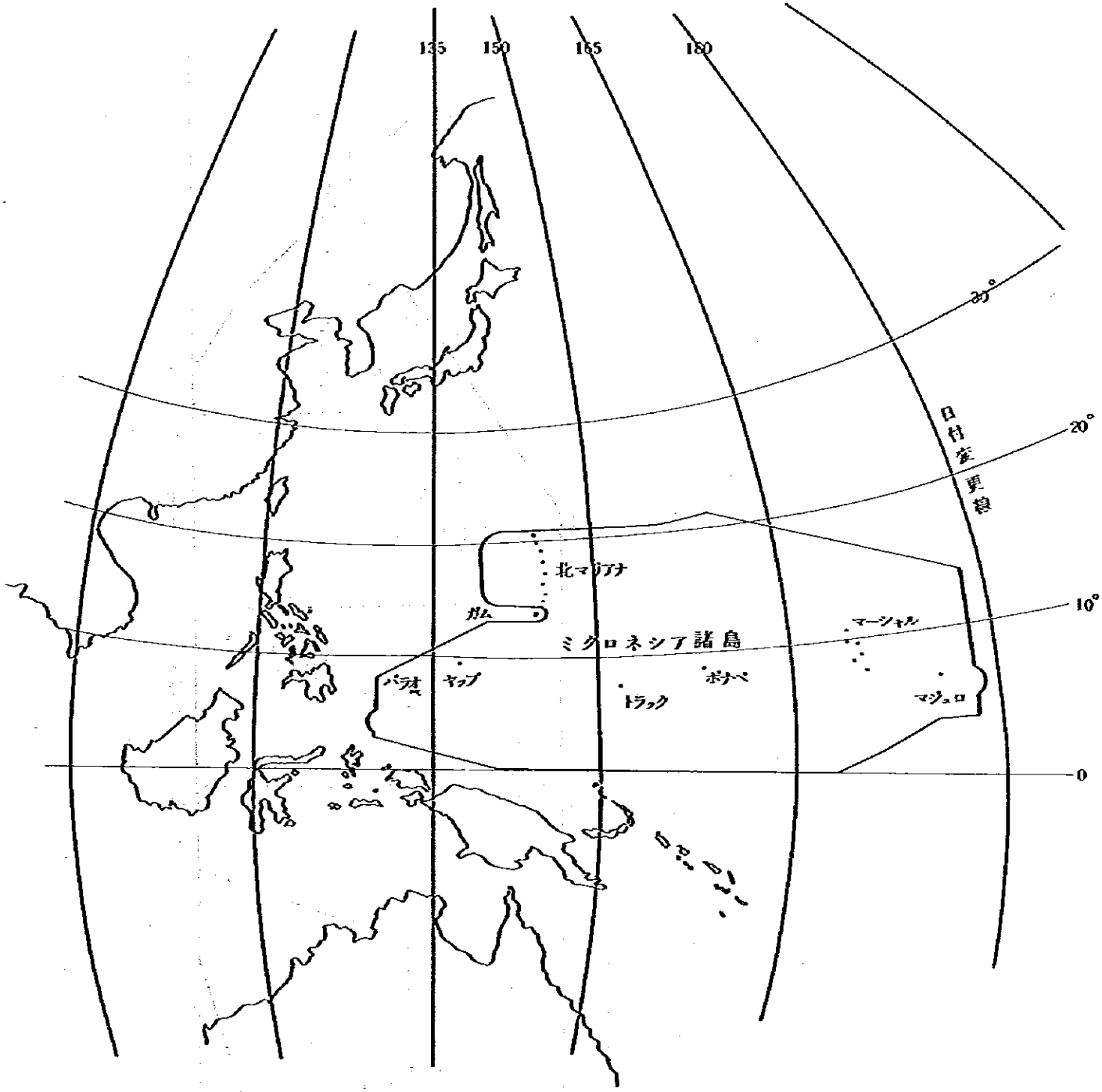
本報告書は同調査団の調査結果を取纏めたものである。

終に，本調査団の派遣に際し，種々ご協力をいただいた日本，ミクロネシア連邦及びマーシャル諸島共和国並びに外務省，農林水産省の関係各位に深甚なる謝意を表する次第である。

昭和５８年６月

国際協力事業団

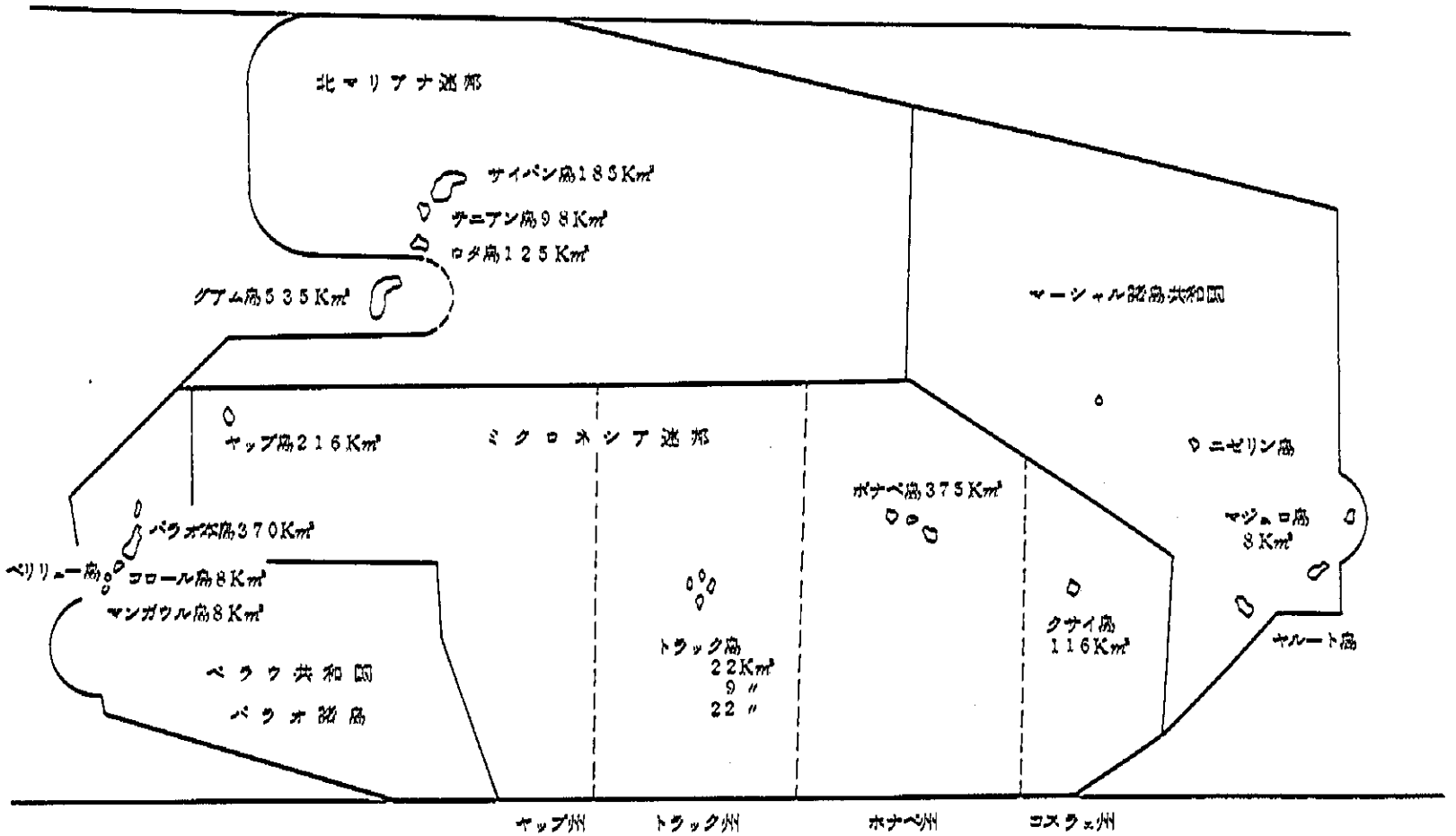
松　山　良　三



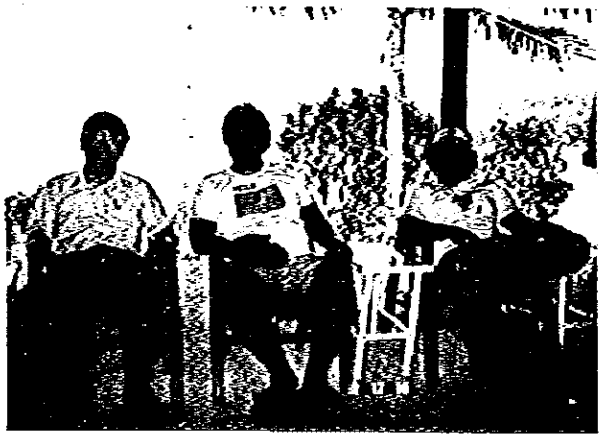
ミクロネシア諸島位置図

国連信託統治領

ミクロネシア



ミクロネシア連邦政府各省庁及び
議会庁舎



古川団長
ペドロ．ハリス連邦政府計画統計局計画課長
アイラ．アカピト連邦政府外務局アジア担当補佐官

アルギン酸原料用海藻ユウチュマ
試験養殖場

ポナペ島ラグーン内のマングローブ地帯

マングローブ地帯にて漁をする漁民

ポナペ政庁近くのマーケット内の魚点

小型クーラー内に主としてカツオ
等の魚が小量保存されていた

目　　次

1. 調査団派遣の経緯と目的

経　　緯

南太平洋諸島にある多くの国々の周辺水域は，古くから我国の遠洋漁業の漁場であり，漁業を通じて関係の深い所である。これらの国は戦後の独立国が多く，国の産業として漁業を重視しているところが多い。しかし，これまでＪＩＣＡの技術協力としては，ミクロネシア諸島のベラウ共和国（パラオ）に於いて鰹一本釣に関する協力及びフィジーに於いて水産養殖の協力を行っているのみである。そこで，昭和５７年度の農林業協力費において行うプロジェクト　ファインディング調査として，南太平洋地域を取り上げることとなった。広大な南太平洋におけるいかなる国をプロファイの対象とするかについて検討がなされた結果，ミクロネシア諸島を対象とすることとなった。なお，メラネシア地域の国からは，水産関係の要請が無いため，また，ポリネシア地域はフランスの海外県や先進諸国の島が多く対象外となった。ミクロネシア諸島は，現在４ケ国に分れている。その内ベラウ共和国については，ＪＩＣＡが技術協力を既に行ったことがあり，また，北マリアナは，アメリカとの関係において外交及び安全保障をアメリカに委ねるコモンウェルスを指向しているので対象外とし，ミクロネシア連邦及びマーシャル諸島共和国を調査の対象とすることとした。

目　　的

ミクロネシア連邦及びマーシャル諸島共和国の主要地域（ポナペ及びマジュロ）に於る漁業の実態及び開発可能性を調査するとともに，現地政府との協議を通じて現地政府の我国に対する援助要請を調査してプロジェクトタイプの技術協力の可能性を明らかにする。

2. 調査団の構成

団　　長	農林水産省技計調査部水産技計課課長補佐	古　川　有　恒
業務調整	国際協力事業団林業水産開発協力部水産技術協力室室長	佐　伯　靖　彦

3. 調査団日程（派遣期間　昭和５７年１２月１３日～同年１２月２４日）

１２月１３日（月）

１０：００　成田発コンチネンタル・マイクロネシアＣＯ＃５６２にてグアム島へ，
グアム島着　１５：１０

１２月１４日（火）

午　前　グアム島アガナの日本総領事館に柄庭総領事，塩野入領事を表敬，ミクロネシア諸島の情勢について情報を入手するとともに，今後の調査について打合せを行う。

１５：３０　コンチネンタル・ミクロネシアＣＯ＃５６２にてポナペ島へ，
ポナペ島着　１９：４５

１２月１５日（水）

０９：３０　1. ペドロ・ハリス・ミクロネシア連邦計画統計局計画課長，アイラ・アカピト・ミクロネシア連邦・外務局外務課アジア担当補佐官と今後のスケジュールについて打合せ

2. ペドロ・ハリス氏に調査目的説明のうえ，同氏よりミクロネシア連邦の開発計画全般について説明をうける

１０：３０　公共情報官のジョセフ・アラムニイ氏の司会によりポナペ州立法府議員と懇談

１３：３０　ミクロネシア連邦外務局局長アンドン・Ｌ・アナライチを表敬

１４：３０　ポナペ州経済開発庁のエクゼクティブ・ディレクター・Ｅ．ローゼンベルグ氏を訪問，ポナペ州の沿岸漁業振興計画について懇談

１２月１６日（木）

午前・午後　Ｐ．ハリス氏他３名の計画統計局員の案内により，ポナペ島南東部の海草養殖場及び同島西岸のフィシング・デポの予定地及び餌生餌漁場等を視察

１２月１７日（金）

午　前　ミクロネシア連邦・マリタイム・オーソリティのタスク・フォースと協力内容について協議

午　後　ポナペ州水産局セクレタリイ・Ｒ．クロフト氏と技術協力内容について協議

１２月１８日（土）

Ｐ．ハリス氏の案内により島内東部の開発（農業・林業等）の予定サイ

トの視察

午後コンチネンタル　ミクロネシアＣＯ井５５６にてマーシャル諸島共和国マジュロへ行く予定のところフライトがキャンセルされたため２１日（火）までポナペ島に滞在するのやむなきにいたった。

１２月１９日（日）

資　料　整　理

１２月２０日（月）

資　料　整　理

１２月２１日（火）

午　　前　　資　料　整　理

午　　後　　コンチネンタル　ミクロネシアＣＯ井５６２にてマーシャル諸島共和国マジュロへ向け出発

１２月２２日（水）

午　　前　　マーシャル諸島共和国外務省にて外務次官トニイ　デ　ブルーム氏，外務次官補スティーブ　ミューラー氏及びアマタ　カブア　マーシャル諸島共和国大統領と協議

午　　後　　コンチネンタル　ミクロネシアＣＯ井５５７便にてガム島経由にて帰国の予定のところ，搭乗予約が取り消され，やむなくナウル航空井３２１にてナウルへ，ナウルよりＪＩＣＡ及びガムの日本総領事館に連絡

１２月２３日（木）

日本総領事館に於いて調査概要につき栖越総領事，塩野入領事に報告

１２月２４日（金）

ＪＡＬ井９４２便にて帰国　成田着　０６：３０

4. 調査団面会者

ミクロネシア連邦

Andon L Amaraidi	ミクロネシア連邦外務局局長
Pedro S Harris	ミクロネシア連邦計画統計局計画課長
Irenius Ira Akapito	ミクロネシア連邦外務局外務課アジア担当補佐官
Mike A McCoy	ミクロネシア連邦マリタイム　オーソリティ実行委員長
Peter Sitan	ミクロネシア連邦マリタイム　オーソリティ実行委員次長

Sailas J Henry	ミクロネシア連邦資源開発局農業課長
Kasiano Joseph	ポナペ州経済開発庁　開発評議会議長
Elliot Rosenberg	ポナペ州経済開発庁　開発評議会取締役
仲宗根　　勇	ポナペ州経済開発庁　開発評議会海洋サービス代表
Richard A Croft	ポナペ州水産庁長官
Antonio Materne	ポナペ州立法府事務官
Joseph Alamny	ポナペ州公共情報官
Hilary Courad	ポナペ州立法府議員
Joanes Edmund	ポナペ州立法府議員
Annes Lebehn	ポナペ州立法府議員
Salter Este	ポナペ州立法府議員

マーシャル諸島共和国

Anata Kabua	マーシャル諸島共和国大統領
Tony A deBrum	マーシャル諸島共和国外務省外務次官
Steve Muller	マーシャル諸島共和国外務省外務次官補

5. ミクロネシア諸島の一般概況

(1) 自 然 環 境

日付変更線を挟んで南太平洋に広がる小諸島よりなる地域は，主として日付変更線の東側のポリネシア，赤道の南のメラネシア，北側のミクロネシアの3地域に区分される。この内ミクロネシアは北緯21度から0度にかけてちらばる大小約3140の島から成っている。その海域面積は4800平方キロ，アメリカ本土が入る面積である。しかし最大の島のガム島であっても日本の淡路島ほどの大きさでありガム島を除けば陸地面積は2200平方キロで神奈川県にも及ばない。また人口は約22万5000人でその内10万人はガム島に住んでおり，ガム島以外の島は12万5000人にすぎない。住民のいる島は100ほどであり他は無人島である。島じまは大部分が珊瑚礁からなり海抜1メートル程度の環礁が多い。また，ポナペなどのいくつかの島は火山島であるが現在活火山として活動しているものはない。気候は熱帯性海洋気候であり時には台風に見舞われることもあるが豊かな太陽と程良い降雨量に恵まれヤシの実やパンの実，また静かなラグーンには多くの魚介類が繁殖しており豊

富な食糧に恵まれている。猛獣，毒蛇や毒虫などもおらず，地上の楽園と思われるところであった。南洋諸島を地域的にミクロネシア，メラネシア及びポリネシアの３つに分けるとギルバート諸島とナウルがミクロネシア諸島に入るが社会的環境からミクロネシア諸島には含めていない。

(2) 社会的環境

ミクロネシア諸島は１５２１年マジェランによって発見され，その後ポルトガル，スペインがつぎつぎとミクロネシア諸島の各島を発見した。１７世紀にはスペイン人が入植しキリスト教の布教と弾圧が行われた。１８８９年スペインは財政難のためミクロネシアをドイツに譲渡しその後１３年にわたりドイツがミクロネシア諸島を領有した。第１次世界大戦の結果１９２０年に日本は国際連盟より委任統治権を得てここに南洋庁をおき第２次世界大戦によりアメリカに占領されるまで我国の統治が続いた。日本の統治時代には，我国は産業開発に加えて皇民教育の普及を徹底させる本格的植民統治を行った。日本の植民地政策は同化政策をとり，農業，漁業を主とした産業の開発は極めて順調にすすんだ。１９３３年，国際連盟を脱退した日本はミクロネシア諸島の永久領有宣言をなした。日本の敗戦によりアメリカは，そのまま軍政をしき，更に１９４７年にミクロネシア諸島が国際連盟の信託統治領となったとき統治国となり今日にいたっている。ミクロネシア諸島の統治についてアメリカは，信託統治の本来の目的であるこの地の社会，経済的な自立達成を図るよりもむしろ戦略的見地からこれらの地域をコントロールできる位置に置くような政策を続けた。一方１９６０年のころからミクロネシア住民の中から自決の要求が高まり１９６５年にはミクロネシア議会を作ることが許可されたが同時に高等弁務官を任命して，ミクロネシア議会が成立させる立法について拒否権をあたえてミクロネシアを施政，監督した。１９６９年になるとアメリカもミクロネシアの将来の政治的地位について，ミクロネシアと協議することとなった。この交渉においてミクロネシア側は，ミクロネシアの主権はミクロネシア人により組織されたミクロネシア政府であり，ミクロネシア人は民族自決の権利をもって独立するか他の国家との自由連合で自治の選択を行う。ミクロネシア人は自からの憲法を制定する権利を有する。自由連合は期限付きの協定とし，終了後はいづれか一方の申し入れにより廃止出来るとの原則をかかげ，自由連合形態を主張した。アメリカは，プエルトリコの様な一定の自治権は与えるも実質的な植民地である自治領（コモンウエルス）の形態とすることを主張した。このなかで，１９７５年北マリアナ地区は北マリアナ連邦を結成し，アメリカと自治領盟約に調印し，米国の自治領となったが他の地域はなおアメリカとの交渉を続け，１９７８年４月，安全保障に矛盾しない範囲で海洋資源を含む外交権を有する自由連合の協定が原則的に合意された。この合意によりミクロネシアは，１５年間アメリカが軍事施設の設定および運営を行うとの

条件の基に憲法を制定し自治政府を享受する権利を得，またアメリカは信託統治終了後１５年間に１４億ドルの財政援助を行うこととなった。１９７８年，自由連合の協定が調印され，３ケ月後ミクロネシア憲法草案が住民投票にかけられた。しかし，その結果パラオ地区とマーシャル地区はこれを拒否し，ここに信託統治領は，自治領（コモンウエルス）の北マリアナ連邦，自由連合のパラオ（ベラウ共和国），ミクロネシア連邦（ヤップ，トラック，ポナペ及びコスラエの４州）及びマーシャル諸島共和国の４つの政治単位に分裂することとなった。北マリアナを除き，自由連合の各政治単位に対しアメリカは順次協定により外交権の行使を認めて来たので，現在では各政治単位（国）とも独自に外交権が行使し得る状況にある。従ってわが国との漁業入漁交渉やＯ／Ｏベースでの協力の取り決め等は各国の担当機関との交渉により行うことが出来る状態になっている，但し，信託統治はいまだ終了していないので正式な外交ルートとしては，在ワシントンの日本大使館を通じて行う事となっている。

(3) 我国との関係

１９２０年より第２次世界大戦の終了までの３３年間は日本による信託統治が行われていたことは前にのべたとおりである。従って現在でも５０才以上の島民は日本語を良く理解するものが多い。また，この地域は我国の遠洋漁業にとって極めて重要な漁場でありミクロネシア諸国の安定的発展は，我国にとっても重要である。

我国は，第2次世界大戦のとき，このミクロネシア諸島を戦場として戦いミクロネシア諸島の住民に損害を与えている。この損害に対する戦時補償として１９６９年わが国は，アメリカと協議を行いミクロネシア協定を締結した。この協定に従ってわが国とアメリカは，日本の戦闘行為によってミクロネシアの人々に与えた苦痛にたいする見舞として５００万ドルを自発的に拠出することにより戦時補償の解決を図った。わが国はこの５００万ドルを地元の要請に基づき物品及び役務の供与により行った。水産関係としては２６トン型鰹漁船７隻の供与がある。しかし，この５００万ドルずつの自発的拠出による解決にはミクロネシアの人々は全くタッチしておらず，ミクロネシア側としては，戦時賠償問題はいまだ未解決の問題としている。また，水産関係について云えば，当時ミクロネシアには，我国から供与した鰹漁船を充分に使用する技術がなく，所期の結果が得られなかったので，１９７７年要請に基づきＪＩＣＡは，事前調査団を派遣してパラオのコロールにおいて２６トン型鰹漁船による鰹一本釣漁業の開発と生餌の畜養技術開発に関するプロジェクト方式による技術協力の可能性について調査を行い，１９７８年４月Ｒ／Ｄを締結してこれより１９８１年３月まで３ケ年間プロジェクト方式による協定を実施した。この結果２６トン型漁船を使用して鰹一本釣漁業が充分に行えることを実証し，また，生餌の畜養についても必要な技術移転を行っている。

(4) 経 済 環 境

ミクロネシア諸島地域は，アメリカの信託統治に入ってからは，日本の信託統治時代に我国の企業により開発された産業はほとんど消滅し，現在ではコプラ以外にみるべき産業はほとんどないといってもよかろう。現在この地域における最大の収入はアメリカからの援助金である。近年は，観光産業も発展して来ているが，これは，ほとんど北マリアナ連邦のサイパン島および米国領のガム島に集中しており，他の地域はパラオに若干の観光資源があり，主として日本からの観光客が訪れるのみで，他の地域にはほとんど観光収入はないに等しい。

6. ミクロネシア連邦

(1) ミクロネシア連邦の概況

ミクロネシア連邦（Federal States of Micronecia）は東からヤップ，トラック，ポナペ及びコスラエの４州に分かれている。ヤップ州の中心は大小４つの環礁から成る島である。総面積２１６平方キロ，総人口約9,０００人で，ミクロネシア連邦の中では最も保守的な気風を保っている島であり又，見るべき産業もない。トラック州の中心は世界最大といわれる直径６０キロのトラック環礁の中にある大小４０の島から成っている。その総面積約１００平方キロ，人口約３万人であり，主要な島は日，月，火，水，木，金，土の七曜島及び春，夏，秋，冬の四季島である。これらの島は火山に起因し小規模ながら山岳を形成している。ポナペ州の中心のポナペ島は，ミクロネシア連邦の連邦政府のある島でありミクロネシア連邦中最大の島である。面積３３４平方キロ，海抜５００以上の峰が１０以上あり２万人の人口を擁している。加えて年間5,０００ミリ弱の雨量に恵まれ，域内において最も豊かな生産力を誇っている。コスラエはポナペの南西にある総面積約１０９平方キロ，総人口約5,０００人の小島である。ミクロネシア連邦域内の島の総合土地面積は７０４平方キロ，人口７６,９４０人である。食糧については自給しうる潜在力は充分にあるが，ミクロネシア連邦の各島で生産可能な主食作物は，主としてタロ，ヤム等の芋類かパンの木の実であり現在主食としての消費の半分をしめると推定される米は生産されていない。かって，日本の信託統治時代にはポナペ島において米作が行われ，全ミクロネシア諸島の日本人の消費を賄ったのみならず日本本土に輸出まで行ったことがあったが，現在では全く行われていない。

１９８０年のミクロネシア連邦の食糧輸入は次の通りである。

表1. ミクロネシア連邦食糧輸入（１９８０）

食糧項目	輸入額 千ドル
米	1,284
小麦粉及び小麦	268
朝食用加工穀類	1,097
穀類	9
砂糖	696
果実及び野菜	237
計	3,591

（ＦＳＭ・計画統計局事務所報告）

ミクロネシア連邦における主要な動物性蛋白源は，海産物と推定されるが，その他に豚も極めて重要な食肉用動物である。但し牛は極めて少なく，ほとんど全て輸入にたよっている。肉類の輸入状況は表２の通りである。

表2. １９８０年度ミクロネシア連邦肉類輸入額

種別	相当額
養鶏	$412,000
牛肉	309,000
豚	10,000
ハムおよびベーコン	46,000
鶏レバー	4,000
合計	$781,000

（ＦＳＭ・計画統計局事務所報告）

またミクロネシア連邦における食糧生産高は表３の通りでありヤシの実をのぞき最大の産物はヤム芋である。

表3. ミクロネシア連邦の食料作物生産高

作物	生産高（トン）	地域消費量
ヤシの実	8,100	400,000
バナナ	1,035	
湿地帯タロイモ	342	各作物は主に各地域で消費され，わずかながら輸出される。
乾燥地帯タロイモ	270	
ヤムイモ	2,250	
キャサバ	1	
サツマイモ	45	
野菜	135	

連邦政府のあるポナペ島で見聞したところによれば，これ等イモ類も積極的な耕作を行なっているのではなく，適地に苗を植えあとは自然に生長するのにまかせている状態である。また，この食糧生産表には記載されていないが，この地域の島々には無数のパン木があり最も重要な食糧となっている。ちなみにポナペで聴取した話によれば，大きなパン木を数本持っていれば，数人の家族が半年は楽に食べて行けるとのことであった。

(2) ミクロネシア連邦の水産業

ミクロネシア連邦の，漁業海域は３００万平方キロに及び特に鰹や鮪のような回遊性の魚類の優良な漁場となっている。特にわが国の鰹一本釣漁業にとっても，最も重要な漁場でありわが国とは毎年入漁交渉を行っている。１９８１，８２年の２年間にこの海域に入漁した日本漁船は延千数十隻，漁獲総計６万数千トンの水揚をあげている。また鮪延縄漁業も盛んであり，ミクロネシア連邦当局が推定した外国（日本，米国，台湾等）による鰹・鮪漁業による漁獲量は，７万７０００トンに上っている。また，外国からの入漁料は１９８１年には２５０万ドルを越えている。ミクロネシア連邦の海域は鰹を中心とする豊富な漁業資源があるにもかかわらず，有効な漁業手段と加工産業がないため，ミクロネシア住民は鰹を中心とする魚類缶詰を毎年大量に輸入し，その総額は約７０万ドルに達している。これに反して魚介類の輸出は輸入の約１２％の８万５０００ドルに過ぎない。輸出品目として大きいものは，貝ボタンの原料となる高瀬貝や，マングローブクラブ等であり魚類や海老類は，グアム島，サイパン島及びホノルルなどの観光地並びにマーシャルの米軍基地クエゼリンへ輸出されている。また最近ではアルギン酸の工業原料となる海草エウチュマの養殖をポナペ島にて試験栽培しており，１９８３年からこれを輸出する予定であり，ポナペ島を中心にこの海草

の養殖を普及させる計画がある。

但し前述のようにミクロネシア連邦においては，いまだ自給自足又は物々交換が経済の大きな部分を占めており，産業としての漁業はあまり盛んではない。

(3) ミクロネシア連邦政府の要請について

ミクロネシア連邦政府計画統計局計画課長のペドロ　ハリス氏及び同外務局外務補佐官アイラ　アカピト氏と協議を行った結果次の要請がなされた。

ポナペ州，ポナペ島において沿岸（リーフ内ラグーン水域）漁業及び極めて小規模な浮魚対象漁業（カツオ等釣りの日帰り操業）の振興及び資源保護を図るため，漁業者及びミクロネシア連邦の青年を対象とする漁業開発訓練センターを設置し，On the Job Training及びClass Room での講義を通じ次の訓練を行うとともに，技術の開発研究及び普及を行う。

1) 沿岸（リーフ内水域）魚を対象とする新漁法，漁具の開発と訓練
2) 沿岸の貝類，特にTrochus貝（大型の巻貝，高瀬貝）及びClam貝（小型のシャコ貝と思われる）のSeed Production及びRe－Seedingによる漁場開発と資源保持の開発の訓練
3) 魚獲物のHandlingの訓練，特に氷を使用する鮮度保持。
4) 漁獲物の島内各地からの集荷及び冷凍保存並びに島内各地への配布の指導
5) 漁獲物の簡単な加工及びレトルトパウチ加工試作開発
6) 余剰漁獲物のFish meal への加工のモデルプラント開発
7) 小型漁船（約２０ｔ）によるPole and Lineのかつお釣漁業操業の実施と訓練
8) 海藻（アルギン酸の工業原料）の養殖指導普及訓練
9) 漁場保全という観念の教育
10) 小型漁船用エンヂンのメンテナンス及び修理の技術訓練
11) 冷凍器材のメンテナンス及び修理の技術訓練

これ等の要請が行われた背景としては，次のことが考えられる。

1) ミクロネシア連邦の４州のうち，コスラエは全くの離島であり又，ヤップは産業発展の可能性が少ない，最も近代的産業発展を望んでいるのはトラック島であるが，現在トラックでは，コレラが猖獗をきわめ当分の間，トラックを対象とする漁業関係のプロジェクトは考慮出来ない。従って同連邦中技術協力の対象の可能性は，ポナペのみであると考えられる。
2) ミクロネシア連邦内の経済は，貨幣経済に関する限り完全にアンバランスであり米国の交付金なくしては全く成立たない。但し，域内全体としてみれば経済の大部分が自給自足か物々交換になっており，貨幣が必要な部分は全体の２０％程度との見方もある。少なく

とも，食生活に関する限りは，米の消費を他のものに切換えるか又は，ポナペ島において米作をすれば完全に自給する事が可能である。又，現時点では近代的な科学，技術能力を要求されるような大規模な産業を興す能力はない事も明らかである。従ってミクロネシア連邦計画統計局としては，将来，豊かな自然生産力を自からの手で産業として開発する能力を身につけるため，水産業全般にわたる総合調査研究開発訓練普及センターの如き機関の設置を理想としており，ミクロネシア連邦の漁業者並びに青少年を対象として，連邦水域内の漁業を総合的に開発するために必要な研究開発及び訓練普及を行うセンターをポナペに設置しようとするものであり，当面はポナペ島の住民を主な訓練対象者として，同島周辺の水域における開発をon the job traningにより行おうとするものである。

なお，附言すれば，計画統計局としては，外洋のカツオ等を対象とするCommercial Fishingについては時機尚早であるとの意見もあり，現時点でこれを行う意図はなかった。今後の課題として教育訓練を行いこれが実施出来る能力を身につけて行きたい，との意向であったが，Maritime Authority（２００海里問題対策機構）は，外国漁船の入漁の見かえりとして直ちに大規模なカツオ漁業を発展させる事を計画しており，わが国に対する無償協力を含めた経済援助を要請している。

また，参考までにミクロネシア連邦政府計画統計局がプロジェクトサイトと考えているポナペ島の概要を示せば次の通りである。

1) ポナペ島は本島の面積１２９平方マイル（３３４平方キロ）で連邦中最大の島である。人口は２０,８２０（１９８０年），人口密度６２人／平方キロで，最高約８００mの山を有する火山形成の島である。年間降雨量平均5,０００㎜で１９７５～１９８０年間の最高6,０００㎜，最低でも4,０００㎜であり，各州中最高である。気温は日中２５～３０℃，夜間２０℃，貿易風が年中吹いているため，北緯6°に位置していても極めて生活し易い。雨は年中平均して降るため水資源には不足していない。

この島の特徴は，一口にいって極めて食料が豊富に産出されることである。又，正確な統計はないが，この島の経済のうち８０％は自給自足又は物々交換で成立っており，貨幣経済は２０％程度であるとの見方もある。従って，マーケットにおいても，輸入商品は結構安価に，かつ豊富にあるが，土地産出の果物，野菜，魚等は商品として販売されているものは少量にすぎない。主な輸入品は米，ビール及び石油である。主食については，正確な統計はないが約半が土地産の食品（ヤム，タロ，キャッサバ，パンの実等），半が輸入した米である。豚肉は充分産出するが，牛肉は輸入している。

2) 同島の貨幣経済のバランスは，輸入が課税対象商品のＦＯＢ価格で約１２百万$（ＣＩＦ推定１５百万$）に対し輸出はＦＯＢ価格で７４３千$にすぎず，バランスは１１百万$（FOB比較，輸入をＣＩＦ，輸出をＦＯＢとすれば１４百万$）の入超である。輸出品の主要物はコ

プラ（５７０千$），高瀬貝（１５１千$）で輸出の9.7%をしめ，この全てが日本へ輸出されている。輸入品の３３%（１９７７年）は食品であり，工業製品及び自動車が３０%石油１５%，酒９%で（小　計　７８%）工業製品及び自動車の約６０%，食品の約３０%は日本からの輸入である。食品中，日本以外の輸入先は米国本土及びオーストラリアで合計６２%を示め，その大部分は米である。同島の著しい入超のバランスは，米国からの交付金によって賄っており近い将来独立をした後は，次第に削減されることとなっている。

3) １９８５年の統計によると人口２４,２００人（外周の島を含む）のうち被雇用者（paid employment)は，3,８５４人であり，その６０%はCommunity Social and Personal Searvice である。農林漁業者は０となっている。

4) 人口の約４０%は１４才以下の若年層であり，又，１５以下とすると６０%に達する。この島にとって，青少年の対策は極めて重要である。

5) 本島はミクロネシアの他の地域と同様に第二次世界大戦後の米国の信託統治の間に，日本の信託統治時代に開発された輸出産業（米作，コプラ，砂糖，ヤシ油工業，製材等）はほとんど全て消滅し，現在では見るべき産業はほとんど何もない状況にある。この島の最大の収入は米国からの交付金である。但し，前述の通り食糧生産力は極めて高く，外貨収入がなくとも食料に関しては特に不足するところではない。（但し，現在輸入している米，魚類缶詰等は不足することとなろう。）

6) 観光を含め来訪者は１９８０年，約8,０００人あり，これ等来訪者による外貨収入約７０万～１２０万$程度と推定されている。

7) １９８０年度では，１４才以下の少年のうち５２%が就学している。正確な就学率は不明だが，６才以上の少年はほぼ１００%小学校（８年制）に入学しているものと考えられる。

(4) 技術協力の可能性

1) 要請内容の全てを網羅するProject は，範囲が広すぎて困難であろうが

(イ) 小型漁船によるPolo-and-Line 漁業

(ロ) リーフ内の資源調査と資源開発・新漁法導入

(ハ) 機関のメンテナンスと修理

(ニ) 魚のHandling

(ホ) 加　　工

(ヘ) 貝類の種苗生産

以上のうち，要請のPriority に応じて２～３の分野にしぼれば，協力は可能と考えられる。又，その他の分野においても，短期専門家による協力も可能である。

2) Project Site としては，中心地コロニアルの港内敷地にあるポナペ州水産庁の近くが考えられるが，他にもいくつかの候補地があげられた。

但し，これ等はいずれも事前調査が行われる時に協議されるものである。コロニアルであれば，一応電気，水道については心配はない。

3) 専門家の生活条件

よく調査団員が自から住む気が起らないSite にはProjectを作ってはならないと云われるが，その点本島は完全に合格である。

(イ) 治安には全く心配がなく，夜間単身で外出しても全く不安はない。むしろ，見識らぬ人々から挨拶を受け，又，夕涼みのパーティーから参加を呼びかけられる事がある。但し，金曜日には，酔漢が若干出没する様である。

(ロ) 水道，電気について若干不安定なところはあるも，先ず問題はない。

(ハ) 生活資材の入手

米はスーパーマーケット（コロニアルに数店あり）で1kg1$程度

日本食用のみそ，しょうゆはスーパーマーケットで入手出来る。

肉類の輸入品はスーパーで日本より安価に入手出来る。

魚介類はFish marketで入手出来る。

7. マーシャル諸島共和国

(1) マーシャル諸島共和国の概要

マーシャル諸島共和国はミクロネシアの最東部にあり東経165°から日付け変更線（180°）の間にちらばる大小32ほどの環礁よりなる国である。この環礁のなかには，原水爆で有名なビキニ環礁やエニウエトック環礁があり，クエゼリン環礁は現在も米軍のミサイル基地として南太平洋では最も重要な基地の一つとなっている。いづれの環礁も海面上1～2m程度の低い小さな島であり，総人口約3万人弱の国である。国内にはコプラ以外にほとんど有力な資源を持たず，漁業資源は鰹を中心に豊富ではあるが自力でこれを開発する力はいまだない。また，観光については，各大陸から極めて遠方の地であり，日本から行けば，ガム島経由で直行しても12時間以上を要する。また観光客に対するホテル等の施設もほとんどなく，ポナペ島のナンマドール遺跡の如き観光資源にもとぼしい。従って現在のところ，マーシャル諸島共和国の最大の収入は米国からの財政援助である。米国にとって，ハワイとミクロネシア諸島をつなぐ中間点に位置し多数の重要な基地が設置されているマーシャル諸島共和国は，南太平洋の諸国のうち最も関係を強く保持する必要がある国であり，それだけ同国に対する財政

援助が重視されている。

マーシャル諸島共和国は，この背景のもと，アマタ　カブア大統領にひきいられて，1977年5月に共和国政府を樹立し，諸外国からの借款により国作りを行なっている。

(2) わが国漁業との関係

他のミクロネシアの諸島と同様このマーシャル諸島共和国の海域もわが国の遠，鮪漁業にとって極めて重要な漁場であり，毎年多数の漁船が出漁している。従って２００海里水域が設定された１９７９年以降は毎年入漁交渉をくり返しており，１９８０，８１年の２年間にわが国の入漁船は７百数十隻，漁獲量４万５千トン強，支払った入漁料は１億３千万ドルを越えている。

(3) マーシャル諸島共和国の要望について

１２月１８日（土）ミクロネシア連邦ポナペ島よりマーシャル諸島共和国の主都マジュロへ向う予定のところ，ポナペ飛行場の誘導灯故障のためフライトがキャンセルされ，そのため3日後の１２月２１日マジュロに向かわざるを得なかった。しかし，帰国の日程を延長することが不可能な状況があったため，マジュロにおいてマーシャル諸島共和国政府関係者との協議は２１日の午前のみとならざるを得ず，充分な調査を行うことが出来なかった。しかし，マジュロにおいて，カブア大統領以下デブロム外務次官S．ミュラー外務次官補等と協議した結果，同国の意向として次のことが判明した。即ちマーシャル諸島共和国としては，現在その首都であるマジュロ島に鰹釣を中心とする漁業基地を建設し，日本を主とする外国の漁船を誘致するプロジェクトに全ての努力を集中している。この漁業基地が発展する事により全ての技術水準が向上し，又向上する事が要求されることとなる。この過程において，色々な面での技術的援助を必要とする事態が生ずるであろうし，また，その場合には日本に対し技術協力の要請を行うことがあるが，現時点において，特にプロジェクトタイプの技術協力を要請するものではないとの意向が表明され，当面ＪＩＣＡが行うプロジェクトタイプの技術協力要請はないと判断された。但し，マジュロが鰹一本釣漁業の漁業基地たるためには，生餌のストックが必要である。現在のところ同国，特にマジュロ周辺には優良な生餌の資源は発見されていない。これに関して，S．ミュラー外務次官補の見解として，これまで日本の日鰹連が行った調査は極めて一部分にすぎない。同国には多数の環礁が未調査で残っておりこれ等の漁場の調査を充分に行えば，周年生餌を供給することが可能でなる未発見資源が在るはずである。そのため，これ等生餌の資源調査及び生餌の生産畜業技術の導入について技術協力を要請することが必要となる事態も考えられる旨の見解が表明された。

鰹生餌調査については，ＪＩＣＡはかつてフィリピンで実施した実績もあり，また，生餌

の生産畜養については，同じミクロネシアのパラオにおいて１９７８年より１９８１年にかけて実施し，成功をおさめている実績があるので，もしこの分野での要請があれば充分対応することが可能であると考えられる。

8. 今後の進め方

今回の調査において，今後の技術協力の可能性のある地域はミクロネシア連邦のポナペ州のみであった。ミクロネシア連邦においてポナペと並んで大きな産業力を有するトラック州はその中心地のトラック環礁の内においてコレラが流行しており，特に衛生面が重視される水産関係のプロジェクトを発足させることは当分の間不可能と思われる。ポナペ州のポナペ島における水産開発センターに対する協力は十分実施可能であり，ミクロネシア連邦からの正式な要請を待って事前調査を行うこととなろうが，このプロジェクトを実施する為には，あらかじめ水産無償によって施設を建設することが必要であると思われる。従って，本件の要請が５８年度早々に提出されたとしても水産無償による施設の建設完成は６０年度中になろう。従って，最もスムーズに進行した場合には次の様なスケジュールとなろう。

５８年　４月　要請書提出
　　７月　事前調査団派遣
　　９月　水産無償基本設計調査団派遣
　１２月　水産無償閣議決定
５９年　４月　長期調査員派遣
　１２月　実施協議調査団派遣
６０年　３月　水産無償による施設完成
　　４月　プロジェクト開始

参 考 資 料

1. Draft of State and National OEDP Project Summaries for FY 1983 Prepared by Office of Planning & Statistic. FSM, National Government May. 1982
2. ミクロネシア漁業開発プロジェクト
   カツオ餌魚畜養技術マニュアル及び生物学的調査報告書（別冊１）
3. Micronecian Fishery Development Project
   Manual for Fish Reservation as Bait of Skipjack and Report for Biological Survey（英文）（別冊２）

参 考 資 料 1

この『１９８３会計年度の連邦及び各州に於けるＯＥＤＰプロジェクト概要（案）』は，連邦及び州開発５ケ年計画の第１年目に当る１９８３年に於て政策及び資金援助につき議会の検討に供するため，計画統計局により用意された緊急開発投資計画の概要である。従って，連邦政府により，これ等計画が全て承認されたものではないが，連邦政府が今後取り上げる開発，投資計画の方向及び概要を推定し得るものである。なお，本計画案は，いまだ公式には公表されていないものであるので，取扱いには注意されたい。

参 考 資 料 2

マーシャル諸島共和国におけるFishing Base Port計画の重要な部分をなす餌生餌の供給に関連し，ＪＩＣＡは，同じミクロネシア諸島の西端のパラオ（ベラウ共和国）コロールにおいて，生餌の生簀蓄養技術開発のプロジェクト協力を行って成功をおさめている。ここに，このプロジェクトにより開発された生餌生簀蓄養マニュアルを参考として別冊添付する。

DRAFT OF

STATE AND NATIONAL

OEDP PROJECT SUMMARIES

FOR

EY 1983

Prepared By:

Office of Planning & Statistic
FSM National Government
May, 1982

YAP

The primary projects selected for the first year funding by this congress are as follows:

1.	Agro-forestry	$66,500
2.	Coconut Dryers	10,000
3.	Handicrafts	64,000
4.	Boat Building	40,000
5.	Pad Prefabrication	34,500
6.	Tractor Rental	50,000
7.	Quarantine	-0-

These primary projects will have impact as follows. The Agro-forestry project is important in that it will intensify the production of the existing production system and also enable the reclamation of degraded lands. The coconut dryer project will affect a centralization of drying coconut and make copra production more efficient.

The handicraft project will have an effect on the economy by increasing export and promoting tourist expenditure in Yap. The boat building project will eventually be the keystone project for the local fishery and transport in the outer islands. The project to make fish aggregating devices is for the outer islands but if the FADS are successfully deployed they could mean a saving in time for fishermen in scouting for fish. At the same time they will be enable to have an increase in catch per unit of effort. The tractor rental service is a service for farmers but it will help reduce production time for the small scale farmers and increase their productivity.

Several important projects in the primary sectors have been omitted such as the orchard development and the fruit and coconut cream manufacturing projects. This is because there may other ways of financing these projects and other ways of accomplishing them. Additionally, if the FY '83 requests are granted these projects can be funded.

In the support sectors energy, finance manpower and marketing are included. The only support function not proposed by Yap is communication. We have yet to resolve how it will be done. The projects selected out of the support system are:

Energy - Biomass pilot, hospital retrofit

Finance - Development loan fund

Storage & marketing - Village ice fish storage

Manpower - T.A.S. Scholarship, CEELP

The manpower development project is large but it could be scaled down to fit funding limitations but it cannot be omitted entirely. The village chill ice fish storage will increase local fish production and is thus important for import substitution. The development loan fund is important for getting the support of private involvement in the development process and is also an important training tool.

For this reason it is also included in the first year funding, and like the manpower project it can also field itself easily to scaling up or down.

The hospital retrofit is seen as an important energy conservation method which will save current watts for other more productive uses of power. Lastly, the biomass pilot is an important alternate source of energy we know it can work elsewhere and has high probability of success in Yap.

Project: Yap Outer Island Fish Preservation
Implementing Agency: Yap Fishing Authority
Location: Yap Outer Islands
Project Duration: 5 years Total Investment: $20,000 (for 1 year)
Project Management: Outer Island Buyers & Fishing Authority

Project Purpose: To provide the outer islanders with preservation devices to assist in storing or preserving the fishermen cath for sale and other perishable food until the field trip ship delivers them to the State Center for marketing or for future consumption.

Project Goal: To install fish preservation devices on each outer island within the duration of the project.

Production Process: Types of fish preservation equipment for an outer island and determined from the ability of the island to support the equipment and utilize it in a productive manner. Determinants of the type of equipment for an island can be population, number of active fishermen, average fish caught per year, amount of surplus fish or farm produce, and the like.

Acquisition of the various equipment and materials will be done in the first few months of each project year for the number of preservation devices and equipment to be installed that year. Construction and installation is followed in the latter part of each year.

Two people from Fishing Authority or Marine Resources Division should be adequate for building and installing the fish dryers and the smokers whereas the ice machines and the freezers will be installed by a refrigeration mechanic or technician loaned from either Yap State Public Works or one of the FSM states.

Time Schedule	1983	1984	1985	1986	1987	
	-	-	-	-	-	
Budget (1983 Prices)	1983	1984	1985	1986	1987	Total
	$20,000	$20,000	$20,000	$20,000	$20,000	$100,000
Manpower (Man months)	1983	1984	1985	1986	1987	Total
	4	4	4	4	4	20

With respect to maintenance and replacement of the devices, there will be a counterpart from each outer island during the construction and installation of the devices to be trained and educated with the necessary specifications. Since the devices will be bought by an individual or an organized group, it is in the interest of the buyer to make sure that there is somebody capable of looking after the device(s) on the island.

It is envisaged that the production and utilization of the devices will increase after the installation of the freezer/chilled storage on Yap's MV/Micro Spirit in 1982.

Project: Boat Building
Implementing Agency: Yap Fishing Authority
Location: Colonia, Yap State
Project Duration: 5 years Total Investment: $40,000 (for 1 year)
Project Management:

Project Purpose: To make available 5 enough boats year suitable for deep bottom fishing and trolling for the interested local fishermen, and to also promote fishing activity in Yap State proper and the Outer Islands.

Prouject Goal: To construct five fully equipped boats with 12 horse power diesel in board engine every year at $8,000.

Production Process: The materials needed for building a boat will be purchased in the first month of the project. That way the construction of the first boat can be started in the second month. Since it takes 2 to 3 months to complete one boat there will be adequate time to receive the diesel motors for the first five boats provided the order for these motors is submitted to the manufacturer during the first month of the project.

Two Yapese men that were trained in Samoa for building this type of boat will be utilized with additional unskilled helpers. The outputs of this project will be sold through Yap State Fishing Authority who will also be coordinating this project. Future construction facilities for this project will be a component of the Yap State fisheries complex. The present Fishing Authority facilities are adequate to support the project until the completion of the State fisheries complex.

Time Schedule	1983	1984	1985	1986	1987	
	-	-	-	-	-	
Budget (1983 Prices)	1983	1984	1985	1986	1987	Total
	$40,000	$40,000	$40,000	$40,000	$40,000	$200,000
Manpower (Man months)	1983	1984	1985	1986	1987	Total
	-	-	-	-	-	-

Project: Yap FADs Fabrication and Deployment
Implementing Agency: Yap Fishing Authority
Location: Yap State
Project Duration: 5 years & continuous Total Investment: $34,543
Project Management: Yap Fishing Authority

Project Purpose: To construct, deploy and maintain fish aggregating around Yap Proper and Yap Outer Islands. The project will also determine the cost effectiveness of utilizing FAD's with respect to various pelagic fishing techniques.

Project Goal: To construct 10' FADs in the first year, deploy 4 around Yap proper and 2 around Ulithi island. To construct and deploy 11 FADs, one for each outer Island in the subsequent years of the project. To also maintain and redeploy the FADs as they break away or deteriorate.

Production Process: Acquisition of materials will begin immediately and then replacements parts are ordered as they are needed.

A consultant will be contracted for a short period of time, 2 to 3 months to train the Fishing Authority staff in construction of the device. The devices will be built by the Yap Fishing Authority staff and deployed by the LCU after consultation with local fisherman for the sites. Surveillance and data collection on the FADs is a responsibility of Yap Fishing Authority.

Ten FADs will be deployed in the first year. FADs maintenance will be done by Fishing Authority the coordinating agency of the project.

Project Costs:

Vessel Charter (2WK)	$ 2,600
Crane Lease (2WK)	1,600
Equipment: Boat & Pickup Truck	2,000
Consultant	5,000
Travel	2,500
Materials	
Drums: 3 drums x $20 x 10 units	600
Rope 3/4": polypropylene 3,000' x $.20 x 10 units	6,000
Thimbles 3/4': 8 x $2.5 x 10 units	200
Shackles 1/2": 15 x $3 x 10 units	450
Chain 1/2": 200' x $2 x 10 units	4,000
Foam: $500 x 10 units	5,000
Marine Anchor: $125 x 10 units	1,250
Connecting links 5/8": 10 x $2 x 10 units	200
Flashing lights: $50 x 10 units	500
GI Ouoe & Iron	1,000
Miscellaneous	1,643
	$34,543

Project: Yap FADs Fabrication and Deployment
Implementing Agency: Yap Fishing Authority
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A consultant will be contracted for a short period of time, 2 to 3 months to train the Fishing Authority staff in construction of the device. The devices will be built by the Yap Fishing Authority staff and deployed by the LCU after consultation with local fisherman for the sites. Surveillance and data collection on the FADs is a responsibility of Yap Fishing Authority.

Ten FADs will be deployed in the first year. FADs maintenance will be done by Fishing Authority the coordinating agency of the project.

Project: Expansion of Pole and Line Fleet
Implemenjing Agency: R & D Marine Resources
Location: Truk
Project Duration: 4 years Total Investment: $250,000/yr.
Project Management: To be determined

Project Purpose: To purchase 4 additional pole & line boats to expand Truk State's ability to exploit the 200 mile extended fisheries zone.

Project Description and Justification: Because of the successful baiting and fishing operations of the Mokorkor and the Garangals, it is proposed that 4 additional pole and line boats be purchased to expend the State's ability to exploit fishing in the 200 mile extended fisheries zone. Each boat is estimated to cost about. $250,000 which includes the first year start-up operational expenses. The boats will be captained by Trukese, and will provide invaluable training experience.

Time Schedule	1983	1984	1985	1986	1987	
	-	-	-	-	-	

Budget (1983 Prices)	1983	1984	1985	1986	1987	Total
	-	250,000	250,000	250,000	250,000	1,000,000

Manpower (Man months)	1983	1984	1985	1986	1987	Total
	-	-	-	-	-	-

Project: Mariculture Laboratory and Trochus Seed Production
Implementing Agency: R & D Marine Resources
Location: Truk
Project Duration: 5 years Total Investment: $30,000/yr.
Project Management: The State of Truk

Project Purpose: To establish a mariculture laboratory to culture marine organisms such as trochus, shrimps, lobsters and others to be determined when laboratory becomes operational.

Project Description and Justification: Rapid developments have taken place in cultivating marine organisms such as trochus, tuna, shrimps, sponges, lobsters, baitfish and others; these organisms can all be grown by artifical means and raised in captivity. The State of Truk will build a laboratory or will allocate present facilities to adopt and duplicate successful techniques on marine organisms artificial growing which it will find relevant and feasible for its State. The State will take the burden of this Project with some support from the Pacific Tuna Development Foundation and the Micronesian Mariculture Demonstration Center.

Time Schedule	1983	1984	1985	1986	1987	
	-	-	-	-	-	
Budget (1983 Prices	1983	1984	1985	1986	1987	Total
	-	37,500	37,500	37,500	37,500	150,000
Manpower (Man months)	1983	1984	1985	1986	1987	Total
	-	-	-	-	-	-

Project: Truk Lagoon Small-Scale Purse Seine Demonstration Project
Implementing Agency: R & D Marine Resources
Location: Truk Lagoon
Project Duration: 2 yrs. Total Investment: $54,860/yr.
Project Management: Marine Resources R & D

Project Purpose: To demonstrate an alternative method for harvesting lagoon pelegic fishes other than dynamiting.

Project Description and Justification: To provide and demonstrate an alternative technology to harvest lagoon pelegic fishes. The target species are "Rastrelliper Kanagurta" (long jawed mackerel) and "Selar Crumenopthalmus" (big-eyed scad). If the project proves successful it will be possible to capture additional species. Cost of the Project will be shared among the State, the National Marine Fisheries Service, and the Pacific Tuna Development Foundation.

Time Schedule	1983	1984	1985	1986	1987	
	-	-	-	-	-	
Budget (1983 Prices)	1983	1984	1985	1986	1987	Total
	54,860	54,860	-	-	-	-
Manpower (Man months)	1983	1984	1985	1986	1987	Total
	-	-	-	-	-	-

Project: Live Bait Production, Storage and Marketing Demonstration, and Training Project
Implementing Agency: R & D Marine Resources
Location: Truk Lagoon
Project Duration: 5 yrs. Total Investment: $11,132/yr.
Project Management: R & D Marine Resources

Project Purpose: To train people in and demonstrate the techniques of live-bait production, storage and marketing.

Project Description and Justification: Techniques for live-bait production are being successfully used in several places in Japan. The Project will try to transfer and adapt these techniques to the Truk Lagoon, to train Trukese in their use; and to develop storage and marketing facilities for the projected live-bait production. The cost of the Project will be shared between the State and the Japan International Cooperative Agency (J.I.C.A.).

Time Schedule	1983	1984	1985	1986	1987	
	-	-	-	-	-	
Budget (1983 Prices)	1983	1984	1985	1986	1987	Total
	11,132	11,132	11,132	11,132	11,132	55,660
Manpower (Man months)	1983	1984	1985	1986	1987	Total
	-	-	-	-	-	-

Project: Truk Fishing Boat Repair Facility
Implementing Agency: R & D Marine Resources
Location: Several in Truk State
Project Duration: 5 years Total Investment: $42,492
Project Management: Private Sector

Project Purpose: To establish a dry docking facility that would service the fishing and transport vessels presently in the State of Truk. The facility is needed to haul out these vessels for maintenance of their hulls.

Project Description and Justification: To prefabricate a portable dry docking facility to service the 14 fishing and transport vessels that are presently in Truk. At present time vessels are without the necessary facility to properly haul out and maintain hulls. Cost of this project will be shared between the State and the Pacific Tuna Development Foundation.

Time Schedule	1983	1984	1985	1986	1987	
Purchase of Materials and Construction	-	-	-	-	-	
Budget (1983 Prices)	**1983**	**1984**	**1985**	**1986**	**1987**	**Total**
	42,492	21,246	21,246	21,246	21,246	127,470
Manpower (Man months)	**1983**	**1984**	**1985**	**1986**	**1987**	**Total**
	-	-	-	-	-	-

PONAPE

For the State of Ponaple the primary sector projects chosen include the the following:

1. Livestock Porudction
2. Agro-forestry
3. Pole & Line
4. Fad Prefabrication
5. Trochus & Clams
6. Feed Milling
7. Food Processing

The livestock production project is intended to upgrade pigs and other livestock on Ponape. This project is deemed important for the food supply as well as the cultural importance of pigs to the people. In rough terms for every person the Ponapean culture requires a minimum of 4 pigs to give that person a proper funeral. On this score alone pig production is lagging behind demand.

Agro-forestry has been the traditional method of farming in Ponape. With modern technology applied to this practice, the food supply will increase tremendously toward achieving food sufficiency. Additionally, the coconut rehabilitation program is included as part of the Agro-forestry project to step up coconut production for oil and exports. The pole and line project will put Ponape back into the tuna industry. This will be boosted by the FAD fabrication and deployment project which will reduce the need for searching for fish. The FAD project have been scaled down but can be increased for inclusion of the outer islands. The trochus and clam project will be an important aspect of resource replenishment for the reefs. It is an important investment and so it is included in the project. Feed milling and food processing are two major projects which will extend Ponape's productivity to feed the FSM. These projects are included to insure that the production of the Village Development Program can be absorbed and to provide food and animal feed. The aim of these two large projects is to supply the food supplements of all the states.

In the support sectors the projects included the following:

1. Energy -
2. Transport & Storage - freezer repair.
   Outer Island dock, airport.
3. Communication
   Micro-wave
4. Manpower -
5. Finance - village development

In the support sector, Ponape gave priority to the energy program for hydro-electric and black oil power generation. These two projects are 17 and 15 million dollars, respectively, these two projects are supported in principle here but funding will have to come from elsewhere.

The transport and storage area support is given to the rehabilitation of the freezer plant in Takatik and the outer island airport and docks and the storage distribution network. The outer island docks and airports, however, are left to other sources of funding as more work has to be done in scoping out the two proposals. The circumferential road is also indicated by Ponape on a $1.2 listing. The details of the project are well known and funding could be incremented for it as funds may allow.

Communication was not indicated in the Ponape FY '83 request but now preliminary work is being done to develop something for next year.

Manpower skill development was also not mentioned in the 1983 requests by Ponape State with the exception of the funding request for the junior high school. This project is not yet detailed for funding specifics but can be developed later.

The MTAP program has also been receiving emphasis on Ponape. This should also be given some attention by this congress.

The focus of Ponape's program is given to village development. For this reason the village development program is an all encompassing financial support project which will give training in on the job activities to the village people as well as providing financial support for this projects.

Project: Pole & Line Fishing
Implementing Agency: State Marine Resources Development
Location: Ponape State
Project Duration: 3 Years & Continuous Total Investment: $198,271
Project Management: Ponape State Marine Resources Development

Project Purpose: To provide import substitution in the form of low cost tuna fish to the people of Ponape and to provide employment and training in commercial pole and line fishing.

Project Goal: To first refurbish the State owned FRB fishing boat Kacho and enter into production. To produce an average catch of at least 1,500-1,600 lbs/day enabling the sale of fish to be around 50¢ per pound.

Production Process: Pole & line fishing will be in operation once the cold storage and ice making facilities are in full operation.

The Pole & line project can be done with two options. First, refurbish the Ponape State owned Kacho which most of the needed parts are on hand. The remaining essential parts will be ordered and received in about 2 to 3 months. A mechanic will have to be on board in the first month to do the work. On the work. On the second option, a vessel can be chartered which would be more expensive but advantageous in that there will be more experienced teachers, and being able to handle more crews.

The duration of the project will be adequately given to train the local crews for the important positions of fishing master, captain, and engineer.

Whichever option is selected, the acquisition of vessel personnel, fishing gear, and other essential materials and supplies for pole and line fishing should be done in four to six months while the Kacho is being refurbished or contract for the vessel charter is being processed.

The vessel will be operated under a sharing system whereby the 10 fishermen would be entitled to 1 share each, a captain and an engineer would get 1.5 shares each, and the vessel would get 3 shares. Assumed number of fishing days per year would be 210 days average catch of at least 1,500 to 1,600 lbs/ day or trip.

The daily routine of the vessel would be as follow:
After loading the vessel with provisions, fuel, ice, etc., the vessel would proceed for night baiting in the lagoon area until dawn. Based on previous operation of the Kacho by a private firm which failed due to poor management, their average bait catch was 35 to 40 buckets per night which is enough for the propose pole and line operation.

The vessel then scants for schools of tuna, or utilize FADs if there's any, at sunrise to conduct pole and line fishing until all the bait is used.

The vessel will return to shore to unload its catch, reprovisioned, and the crew will perform all the minor maintenance that is always necessary on a commercial vessel of that size. Minor maintenance should only take 2 to 3 hours daily.

As evening approaches the vessel is off for another new day's operation.

The operation will be privatized once proven viable.

Project Costs:

Fixed Costs Per Year

Manager 1 @ $8,000	$ 8,000	
Office Staff 1 @ $5,000	5,000	
Pickup Truck - Use and Depreciation	3,000	
Utilities, Communication, rent, etc.	1,500	
Vessel Insurance	6,000	
Vessel Depreciation	10,000	
General Maintenance - Vessel	6,000	
Fishing Gear (1st year)	13,000	
Contingencies - 10%	5,250	
		$ 57,750

Vessel Operating Cost Per Year

Fuel: 75 gal/trip x 1.60 gal. x 210 trips	$25,200	
Ice: 500 lbs./trip x $.02 lb. x 210 trips	2,200	
Oil & Lubricants: 3 gals./trip x $1.70 x 210 trips	1,071	
Food: 12 men x $5/trip/man x 210 trips	12,600	
Fishing Gear Replacement $15/trip x 210 trips	3,150	
Vessel Maintenance/trip $30/trip x 210 trips	6,300	
		$ 50,521
		$108,271
Two new boats 40 ft. at $45,000 each		90,000
		$198,271

NOTE: Crew will be paid on a "share" basis.

Time Schedule	1983	1984	1985	1986	1989	
	-	-	-	-	-	
Budget (1983 Prices)	1983	1984	1985	1986	1987	Total
	198,271	-	-	-	-	-
Manpower (Man months)	1983	1984	1985	1986	1987	Total
	144	144	144	-	-	432

Project: Reef Re-Seeding
Implementing Agency: State MRD, R & D
Location: Kolonia, Ponape State
Project Duration: 5 yrs. & Continuous Total Investment: $33,700 1st yr.
Project Management: State Marine Resources Division & Resources and Development.

Project Purpose: To restock the reefs around Ponape State with various species of shellfish which have been depleted thru over harvesting. To increase its exports of trochus shells, and the desirable protein source of clams will continue to be available to the people.

Project Goal: To construct the needed tanks and water circulation system in two months, and start raising trochus, clams, and possibly oysters at the capacity of the facility until they reach certain sizes before they are transplanted to the reefs.

Production Process: Two to three long concrete tanks of approximately 40 to 50' long, 4 to 5' wide and 4' deep equipped with water circulation in excess of 400 gallons per hour will be built in the first two months.

The tanks will be made out of concrete blocks, which are then sealed, and PVC pipes for water circulation.

Once the tanks are operational, spawning of trochus, clams, and possibly oyster will be initiated. The shells will be transplanted to the reefs around Ponape after they have reached certain sizes.

Construction of the facilities will be done by the State MRD staff, however, once the tanks are operational, two people will be employed for $4,000 each annually. Another two helpers should come from YACC and/or YCC program.

Project Cost:

Concrete Tanks (2)		
500 cement blocks @ $1.10 x 2 tanks	$ 1,100	
Various pipes & fittings	800	
Cement, sand, gravel	1,200	
Water pump	600	
Miscellaneous parts & supplies	500	$ 4,200
Salaries 2 people at $4,000 each		8,000
Equipment - for 5 years		
2 boats	5,000	
2 O.B. engine	4,000	
2 replacements O.B. engine	4,000	
3 replacement pumps	1,000	
Scuba equipment	4,000	18,000
Supplies - for 5 years - $2,500		
Various spare parts	2,500	
Consumable supplies	1,000	3,500
		$33,700

Time Schedule	1983	1984	1985	1986	1987	
	–	–	–	–	–	
Budget (1983 Prices)	1983	1984	1985	1986	1987	Total
	$33,700	$9,000	$9,000	$10,000	$10,500	$72,200
Manpower (Man months)	1983	1984	1985	1986	1987	Total
	48	48	48	48	48	240

Project: Seaweed Aquaculture Promotion
Implementing Agency: Ponape State EDA
Location: Ponape State
Project Duration: 5 yrs. & Continuous Total Investment: $242,240;
Requesting $162,240

Project Management: Ponape State EDA

Project Purpose: To investigate the potential and development of a viable product, which can be produced by the people of Ponape State.

Project Goal: To complete Phase II in one year, Phase III in two years, and finally Phase IV in another two years.

Production Process: Phase I was jointly completed by Ponape State Marine Resources Division and the University of Hawaii, Sea Grant Program with a total cost of $80,000. This phase was primarily aimed at gathering environmental data, growth data, man hours, and other costs.

Phase II has just started to get underway. During this phase, four seaweed investigators will be recruited to assist the existing staff in promoting the growth of this seaweed starting aquaculture program in local schools, and get farms into the private sector. This phase will cost approximately $80,000.

Phase III is scheduled to be implemented upon availability of funds, totaling about $37,290. This phase is aimed at investigating the possibilities of extending the project to the outer islands of Ponape at which time environmental data, growth data, and other pertinent informations with respect to such project can be obtained. This phase is envisioned to last for 2 years.

Phase IV, the final phase for this project will be carried out upon the successful completion of phase III and availability of funds. People from the outer islands who were working on the project in Phase III will be utilized in promoting the establishment of private farmer in the outer islands which is the prime objective of this phase.

Phase IV will only be attempted in the outer islands that have accepted the project in collaboration with the leaders of the outer island. Ponape State Marine Resources will provide technical assistance, and seed stock for this Phase I and Phase II.

Seaweed can be grown in sea wter 4-7 deep. There are several methods of growing seaweed. The one currently being practiced is to attack a piece of seaweed to a line that is suspended a foot or so above the bottom. The seaweed can be harvested four times a year, sun-dried, packed into copra bags and stored until enough is on hand to fill a container for shipment.

Project Costs:		
	Phase 2	$ 80,000
	Phase 3	37,290
	Phase 4	44,950
		$162,240

Project: Outer Islands Sea Cucumber, and Fish Drying & Smoking
Implementing Agency: Ponape State EDA
Location: Ponape State Outer Islands
Project Duration: 3 yrs. & Continuous Total Investment: $79,746
Project Management:

Project Purpose: To determine the abundance and species of sea cucumber for commercial use. Given the result of project phase one is positive, the commercially viable sea cucumber will be utilized for export by the outer islanders, of course generating income for the outer islanders.

Project Goal: To complete a research to determine the viability and availability of the commercially accepted species of sea cucumber in 4 to 6 months. To train the outer islanders about the processing, quality control, and packing in 2 years, at the same time another technician will be to train the outer islanders about improved fish preservation techniques, drying and smoking.

Production Process: The process will be discussed in two phase provided that the first phase has positive result, the second phase will be followed. If the second phase of the sea cucumber project is proven non viable, the sea cucumber will be terminated leaving only the fish drying and smoking to be utilized in the second phase.

a. Phase I

A consultant will be contracted to locate the islands with the greatest abundance of commercially acceptable sea cucumber Microthele nobilis and the black fish Actinopyga sp. To do this he should first research the available information on the pre-war fisheries of Ponape state. This information is available at the National Marine Fisheries Service library in Honolulu, and is on file in Saipan and possibly Palau. A considerable amount of data should also be available in Japan on the pre-war fisheries and some effort should be made to obtain this.

Once the consultant has located the islands where most pre-war fisheries for sea cucumber occurred, he should then travel to these islands and survey the sea cucumber resources himself.

The consultant will require scuba diving equipment as well as a portable compressor, and for processing purposes, a portable smoke house, boiling drum and wire basket. A small skiff with a low horsepower outboard motor should be provided so that the consultant can move independently. Once the atoll with the largest resources of sea cucumber has been identified, and if the resource appears large enough to sustain commercial exploitation, then Phase II should begin.

b. Phase II

To technicians will be employed: one to train the outer is landers in improved fish drying and smoking techniques, while the other is to carry out the training of island people and to ensure that the processing of the sea cucumber is kept to the highest grade possible. The technician will travel to the selected atoll with the same equipment used by the consultant. He will also take with him enough material to build two more portable smoke houses and boilers. It is planned that the technician will spend up to 23 months on the outer island and one month on Ponape. The technician will be responsible for training, processing, quality control and packing in the outer islands, while the EDA will be responsible for international marketing.

The best markets for dried sea cucumber are in Hong Kong and Singapore. The SPC has a list of companies interested in the purchase of sea cucumber

from Pacific Island countries, and because of the demand for the product, few marketing problems are anticipated.

Sea cucumber can be packed in clean copra bags and sent by container. No refrigeration is required at any stage of processing and shipment, but the processed product must be kept dry.

Project Costs:

Phase I:	Survey of Sea Cucumber Resources	
	Consultant	
	4 Months x $8,000/Month	$ 32,000
	Skiff, Engine and Other Equipment	5,000
	EDA Staff Counterpart	4,000
	Contingencies	4,000
	Total - Phase I	$ 45,000
Phase II:		
	Technicians	
	2 years x $3,120/yr. x 2 people	12,480
	Processing Equipment and Sheds	5,000
	Housing	14,400
	Contingencies	2,863
	Total - Phase II	$ 34,743
	Total - Phases I and II	$ 79,746

Project: Fish Aggregating Device Fabrication & Development
Implementing Agency: State Economic Development Authority
Location: Around Ponape State Proper
Project Duration: 5 yrs. & Continous Total Investment: $72,786
Project Management: Economic Development Authority

Project Purpose: To determine the efficiency of FADs in increasing the local fishermen catch, thus saving much time and fuel.

Project Goal: To deploy and maintain 10 FADs around the island of Ponape in the first year. To deploy additional FADs in the subsequent years maintaining and redeploying them as they deteriorate or breakaway.

Production Process: It is proposed that two Ponapean be recruited and sent to Fiji for training regarding the use of a depth finder and the fabrication of the FADs being utilized in Fiji for a period of 2 months.

Construction of the FADs will be initiated upon their return from Fiji. Each will cost approximately $2,500 and the annual maintenance cost for the 10 FADs is about $15,000. Setting the FADs at the sites determined by the depth finder will require the use of the local landing barge with a specialized hydraulic hauler.

Two additional Ponapeans will be recruited, in addition to the original two. Total of four men are incharge of this project, keeping statistical data, surveillance of the FADs, and other responsibilities as needed.

Project Cost:

Depth	$ 8,000
Hydraulic Hauling	8,000
FADs Materials (10 x $2,500 each)	25,000
25 trips ($50/trip x 25 trips)	1,250
Salary (4 men x $3,120/yr.)	12,480
Training (2 men x $3,000)	6,000
Contingencies 20%	12,146
	$72,876

Time Schedule	1983	1984	1985	1986	1987	
	-	-	-	-	-	
Budget (1983 Prices)	1983	1984	1985	1986	1987	Total
	$72,876	$15,000	$15,000	$15,000	$15,000	$132,876
Manpower (Man months)	1983	1984	1985	1986	1987	Total
	-	-	-	-	-	-

KOSRAE

In the primary sector the emphasis on Kosrae from the OEDP list was analysed and the first year funding request can be as follows:

1. Piggery -
2. Agro-forestry
3. Pole & Line
4. Long-line
5. Bottom Fishing
6. FAD Fabrication
7. Citrus Export Packaging

The piggery project is included in order to resupply the island with pigs that were destroyed by hog cholera epidemic several year ago. The Agro-forestry includes the production of seedlings for citrus production and co-conut rehabilitation. The pole and line fishery is included to enable the activation of existing fishing boats and to add 2 more boats to enable them to enter into tuna exports. The long-line fishery is also aimed at fuller utilization of the existing boats and to expand the industry base. The bottom fishing project is at the pilot stage and from catch reports on Kosrae the project will be viable. The bottom fishing project therefore will be to exploit their fishing potential. Some projects were not included here. But specific mention is needed for the citrus export packaging project, the saw-mill and the furniture making. These projects have been on a pilot and all seem feasible. For these money could be taken out of the development loan fund to run them.

In the support sector two projects were seen as needing priority. The are:

1. The Fisheries Complex
2. Development loan fund.

Project: Pole & Line
Implementing Agency: Marine Resources, Kosrae
Location: Lelu
Project Duration: 5 yrs. & continuous Total Investment: $166,526
Project Management:

Project Purpose: To generate skipjack tuna for local consumption and for export.

Project Goals: 13 tons every 27 days

Project of Production: All the basic requirements of the project will be put together in the first year and expanding annually into the fifth year.

The activities in the first year will include the following.

Orders and Acquisition 6 months
Boats -
Gears -

Recruitment -
Trainers 3 -
Fishermen 7 - per boat

Start up - Sequence
Three persons who have experience in pole and line fishing in Hawaii or Palau who are Micronesian citizens will be recruited to train the fisherman in Kosrae for 18 months. These persons will fish initially with 7 recruits on the 44 ft. boat Kosrae now has. They will use that one boat until a new boat arrives then two of the trainers will be transferred to the new boat and train an additional 8 persons on the new boat. The new boats will be spaced out so that they can arrive at 6 month intervals so that the trainers can be shifted to the new boats as they arrive.

Organization and Manpower
The operation will be under the supervision of the State Marine Resources Office who will direct the operation and the shore support activities will include engine maintenance on the boat, oil change, fueling and icing. The fishermen will do the baiting and fishing until every trainee fishermen have become familiar with baiting and fishing. As more people become familiar with the operation the fishermen will be rotated so that on some days some men may only do baiting and the others do the fishing. With regard to baiting, the will eventually establish a way of catching and holding bait in the lagoon area so that the baiting training will eventually provide manpower for the bait catching activities.

The activities of the pole and line fishery will require the following positions.

1. 1 diesel mechanic
2. 3 trainers
3. 7 fishermen trainees (1st 6 months)
4. 10 fishermen trainees (2nd 6 months)
5. 12 fishermen trainees (3rd 6 months)

Equipment, facilities, space
The current office used by the Marine Resources can be used as the base of this operation. Housing will be needed for the fishermen trainers. A house will be rented to accommodate the three fishermen.

The equipment required for this operation will be as follows:

1. 2 FRP boats 44 ft. long.
2. pole and line gear
3. tools and spare parts

Other Support requirements:

1. ice required for the boat operation -

$$\frac{\text{SpH fish} \times (t_2 - t_1) \times \text{wt. fish}}{\text{BTU/lb. ice}} = \text{lbs. ice}$$

$$\frac{.75 \times (80 - 82 \times 2{,}000}{144} = 500 \text{ lbs./trip}$$

2. Fuel is estimated at 12 gallons per day based on the fueling record of the fishing boat in Kosrae now being used for bottom fishing.

   12 x 17/mo. x 12 = 2,448 gallons.

Fueling initially will be done directly by Mobil across the bay from Marine Resources.

Transport, storage, communication

The transport requirements for this project will be restricted to transporting the ice from the ice machine to the boats and to transfer the fish from the boats to the blast freezer. If these equipment are located near the boat dock transport will be minimal.

The greatest support component for this fishery will be the storage consumption of electricity that will be needed to make the ice, blast freeze the fish and to hold the fish. The BTU, requirement based on 3/4 ton catch per boat/day will be as follows:

ice -	500 lbs.	x 144 BTU	=	72,000 BTU
Freezing iced fish	700	x 1.500	=	150,000 BTU
	.75 x 4	x 1.500	=	4,500 BTU
	.41 x 52	x 1.500	=	31,980 BTU
				258,480 BTU

Converting the heat/cooling requirements of the fish we use 1 kilowatt hour - 3,412.14 BTU so the power requirement will be 75.75 kilowatts to ice and freeze the 1,500 estimated catch each day. The conversion ratio of fuel to kilowatts for the Kosrae generators are not known so this will have to be determined to get the true cost of the fish storage.

Storage density for the fish will be about 35 lbs./cu. ft. so that the thruput for the tuna being caught by the pole and line activities will be approximately 1 freezer van 13-17 tones boat if the pickup schedule is every thirty days.

Communication for the boats will require some kind of VHF system to communicate with the shore facility and other boats.

Wholesaling and retailing will be done on two front. The fishing authority will do the marketing of tuna for export out of the State and on the local level, they will have a small fish market in Lelu. The Marine Resources will also negotiate with village businessmen in Malem, Utwe and Tafunsak to sell the fish in their stores under ice or in small freezers.

The project will not require construction as is anticipated through foreign aid, if Kosrae receives the blast freezer and freezer anticipated under that program but eventually in a year or two of the project more freezer units will need to be added.

When additions are needed freezer van's can be rented from P M & O to hold the fish. The only thing needed will be plug-in outlets for the freezer vans.

Cost of system

Fixed costs	
1. 2 boats -	$ 88,000.00
2. Fishing gear -	14,000.00
3. Depreciation-1st yr. (SYD Method)	8,545.00
4. Gear loss 5%	750.00
	$111,295.00
Variable Costs -	
Fuel - 2,448 gallons at/1.60 at/1.60 gallon	$ 3,916.80
Power - for icing, freezing 75.75 kw x 17 x 12 = 15,453 15,453 kw x .17 =	2,627.00
	$ 6,543.80
Labor	
1. Diesel mechanic 1 x 2080 at 2.45/hr.	4,896.00
2. Trainers 3 x 3,264	9,792.00
17 x 2,000 x	34,000.00
3. Trainees	$ 48,688.00

25% of catch over 16,000 lbs. = 74,000 at .30¢/lb. paid to fishermen to be taken out of catch only - $22,200.00

$166,526.00

Project Title: Longline
Implementing Agency: Kosrae Marine Resource Division
Location: Lelu
Project Duration: 5 years and continuous Total Investment: $127,726

Project Purpose: To train and demonstrate to the local fishermen the viability of longline fishing, at the same time supply yellowfin tuna, sharks, marlin, etc. for local markets and for export. The longline project will generate additional employment and hopefully the trained fishermen under this program will eventually become private entrepreneur in longline fishing.

Project Goal: The project is aimed at producing at least 13 tons of yellowfin tuna, shark, marlin, etc. per 27 fishing days. Production at this rate will be able to satisfy the local demand which is esttimated to be 2,196 lbs/day based on the recommended minimum nutritional requirement of fish consumption per 1980 census and for export markets. The project will also aimed at producing fishing and financial records which can be used for evaluation of the feasibility of longlining in the Kosrae area.

Production Process: The needed personnel, equipment, materials, supplies and all other necessities for starting a viable longline operation in Kosrae State will be obtained in the first year and expanding annually into the fifth year and thereafter. The expansion of the longline project is at the discretion of the project Management based on the fishing and financial records produced by the ongoing.

Project: Deep Bottom Fishing
Implementing Agency: Kosrae Marine Resources Division
Location: Kosrae
Project Duration: 5 years Total Investment: $44,952
Project Management: Kosrae State MRD

Project Purpose: To utilize deep bottom fishing to exploit the unexploited deep bottom fishes along the outer reef slope.

Project Goal: To produce at least 1,500 lbs. in four fishing trips per week for local consumption and to generate employment for potential Kosrae adults that are most likely to continue deep bottom fishing after the termination of the project.

Production Process: The deep bottom fishing gear will be ordered and acquired within the first 3 months of the project. The recruitment of the master fisherman and the local fishermen will also be done during the same period.

The project will be initiated with two 28 ft. Alia vessels, 6 local fishermen and a master fisherman. Most of the fishing will be done at night, departing around 1400 and returning 0800 with at least 5 fishing hours per fishing trip. The catch will be sold through Kosrae MRD/CO-OP to cover the operating costs and supplement the local demand for deep bottom fishes, mostly reef fish. The excess of the operating cost will be distributed accordingly among the master fisherman, local fishermen, and the fishing vessels. For incentive purposes the local fishermen and the master fisherman will be paid $5 and $8 respectively per fishing day.

longline project and other contributing factors responsible for the success or failure of a longline project.

Kosrae State currently has two FRP 25 ft. diesel boats which can be equipped with longline fishing gear and hydraulic haulers. The tuna longline captain will be recurited during the first six months of the project along with 8 to 10 Kosraen fishermen, 4 to 5 each boat. These fishermen should have the interest and competence so that they can continue fishing after the termination of the project. The longline gear and the haulers should also be ordered and acquired in the first six months of the project to enable the actual operation of the longline fishing in the latter part of the first year.

The vessel(s) will conduct a series of one day and overnight fishing trips averaging at least 12 to 15 fishing days per month or one day fishing trip averaging 27 days per month. The catch will be sold at a reasonable price to local market and export market to cover the operating costs and the remainder will be shared equally among the crews excluding the captain or master fisherman and the Kosrae Marine Resources Division representative. Kosrae MRD representative will be in charge of translation betweeen the captain and the crews and keeping records as mentioned earlier. The project will be carried out under the direction and management of Kosrae MRD and Kosrae Director of Resources and Development. The crews will be also paid $7 per fishing day.

Project Cost:

Crew to men x $189/mo. x 12 mo.	$ 22,680
Secretary	2,000
Sales Clerk 3 men x $2,500	7,500
Fishing Captain Contract pay 2,250/mo.	27,000
Perdiem $40 x 365 days	14,600
Travel 1 roundtrip	2,000
MRD Observer/Representative, local hire $600/mo. x 12 mo.	7,200
Communication, Cable, Phone	800
Supplies and Equipment	
Fuel: 3 gal./hr x 13 hr x 12 trips/mo. x 1.60 per gal. x 12 mo.	8,986
Ice: 6000 lbs./wk. x $.03/lb. x 52 wk.	6,240
Boat (1)	3,000
Longline hauler and fishing gear	20,000
Lube, etc.	2,000
Gear Loss	3,720
	$127,726

Kosrae MRD is currently conducting a rehabilitation program for the 1/2 todpmrtd in deep bottom fishing which is averaging 183 lbs. c.u.e. A training in these fishing methods was done alone by SPC in 1979 which resulted in 21 lbs/reel/fishing hour. Therefore the possibility of not attaining the desired goal is very remote.

Project Costs:

Boat 2 x $6,000	$ 12,000
Fishing Gear	5,000
Bait Grinder 2 x $30	60
Depreciation of boat (.33 x $6,000)	1,980
Fuel (4 gal./trips x $1.60 x 2 boats x 160 trips	2,048
Maintenance and Repair	400
Replacement of Fishing Gear	600
Ice 200 lbs./trip x 160 trips x $.03 lb.	960
Wages: ($38 x 208 days/yr.) x 20% profit	21,904
	$ 44,952

Estimated Revenue:

1,500 lbs./wk. x 52 wks. x $.65 lb.	$ 50,700

Project: Trochus Replanting
Implementing Agency: Kosrae MRD
Location: Kosrae State
Project Duration: 5 years & Continuous Total Investment: $20,460
Project Management: Kosrae MRD

Project Purpose: To restock the reefs around Kosrae State with trochus which has been deploted through environmental disturbance.

Project Goal: To construct a concrete tank equipped with water circulation in one months and start spawning trochus at the capacity of the tank until they reach 1 to 1 1/2" in diameter to be trainsplanted to the reefs.

Production Process: One concrete tank 40' long, 4' wide, and 4' deep equipped with water circulation in excess by 400 gallons per hour will be constructed in a month. The tanks will be made out of concrete blocks, which are then sealed, and PVC pipes installed for water circulation.

Spawining of the trochus from the larvae which are shed by the adult trochus in the tank will be started. The trochus will be transferred to the reef around Kosrae when they have reached the transferrable size.

The tank will be constructed by MRD staff. A man will be hired for $4,000 annually once the tank is operational.

Project Cost:		
	Concrete tank	$ 2,100
	Salary	4,000
	Equipment - for 5 years	9,000
	Supplies - for 5 years	3,500
		$18,600
	Contingencies 10%	1,860
		$20,460

Tice Schedule	1983	1984	1985	1986	1987	
	-	-	-	-	-	
Budget (1983 Prices)	1983	1984	1985	1986	1987	Total
	$20,460	$5,000	$5,500	$6,000	$6,500	$43,460
Manpower (Man months)	1983	1984	1985	1986	1987	Total
	-	-	-	-	-	-

Project: Kosrae FADS Fabrication & Deployment
Implementing Agency: Marine Resources Kosrae
Location: Lelu
Project Duration: 5 years & continuous Total Investment: $28,943
Project Management: Kosrae Marine Resources Division

Project Purpose: To construct, deploy and maintain fish aggregating devices around Kosrae Island. To determine the effectiveness of FADS in improving the efficiency of trolling, pole & line, deep bottom fishing, and other pelegic fishing methods.

Project Goals: To construct and deploy 9 devices for the first year, maintaining and redeploying them as they break away or deteriorate.

Project Process : Acquisition of materials will begin immediately and then replacement parts are ordered as they are needed.

In the first year nine devices will be deployed.

The FADS will be designed utilizing three drums filled with foams per unit. They will be constructed by Kosrae Marine Resources Division (MRD) staff with assistance from Public Works.

MV/Kaselelia will be chartered to deploy the FADS where as the surveillance of the FADS will be done by Kosrae MRD Yanmar 35 FRP boat. Kosrae MRD staff will be responsible for data collection from fishing trips performed by the division staff and from individual fisherman to the degree possible.

The management and coordination of the fish aggregating devices project will be done by the Chief, Division of Marine Resources and the Director, Resources and Development.

Table III - Support Projects for Primary & Service Industry Projects

	YAP	TRUK	PONAPE	KOSRAE
Utilities				
Fuel storage				
Water				
Irrigation	$ 33,000			
water system				
energy				
Construction				
Building				
Site preparation				
Transport, Storage, Comm.				
Roads				
Farm roads	13,000			
Road rehab.				
Circumferential rd.				
Docks				
Outer islands				
Airport				
Outer islands				
Mortlocks ship				
Replace Kaselehlia				
Dry docking				
Warehouse				
Freezer plant repair			$ 76,800	
Tuna transhipment		$2,000,000		
Ice plants/O.I.				
Radios				
Telephone				
Microwave repeaters				
Wholesale, retail, rest, hotels				
Industrial Park		120,000		
Rural fish storage	15,000			
Kosrae, fish complex				$158,000
Yap fisheries complex				
Market agriculture				
Finance & Banking				
Fish coop loan		100,000		
Poultry farm loan				
Dev. loan fund	265,000			500,000
Village financing			1,000,000	
Education & Training				
Business training		22,990		
Fisheries training	15,000			
Agri aide training				
Manpower Dev.	430,000			
Bottom fishing training			11,429	

Table III (Cont.)

	YAP	TRUK	PONAPE	KOSRAE
Research Development				
Bait Assess, O/I		155,238		
Yap Market Survey	2,000			
Development Study	25,000			
Nursery research				
Export promotion				
Tourism Plant & Dev.				
Mariculture lab -				
Market Network			165,153	
Marine Re-survey	100,000			
	$898,000	$2,398,228	$1,256,382	$658,000

Project: Rural Chilled Storage
Implementing Agency: Yap Fishing Authority
Location: Outlying Villages of Yap Proper
Project Duration: 3 years Total Investment: (1 yr.) $15,000
Project Management: Villagers & Fishing Authority

Project Purpose: To accommodate the need for ice and chill storage for the fishermen in the remote villages of Yap State.

Project Goal: To build and maintain two chill storages in two of the outlying villages in Yap in the first year of the project. To also complete the establishment of the remaining chill storage during the next two years of the project.

Production Process: Materials and labor for the project will be acquired during the first 2 to 3 months of the project for the first two chill storages. The materials for the construction of the remaining storage facilities can be ordered during the construction of the first two storage facilities to maintain continuity of the construction process.

The system will be primarily for holding ice and fish for the fishermen and also sells fish in the village by either the Fishing Authority or whoever is responsible for transportation services regarding ice, fish, etc. Ice will be provided by the Fishing Authority at an affordable price for the fishermen.

Communication equipment such as CB radio will be installed at each storage facility for ease of obtaining the needed services or materials. As for as sites for the facilities, an agreement between the person or group responsible for the facility and State Fishing Authority will be documented. The facility will be equipped with ice boxes and other essentials for preserving fish, mainly reef fish.

Time Schedule	1983	1984	1985	1986	1987	
	-	-	-	-	-	
Budget (1983 Prices)	1983	1984	1985	1986	1987	Total
	$15,000	$30,000	$30,000	-	-	-
Manpower (Man months)	1983	1984	1985	1986	1987	Total
	3	3	3	-	-	-

Project: Training
Implementing Agency: Yap Fishing Authority
Location: Yap Proper and Outer Islands
Project Duration: 5 years Total Investment: (1 yr.) $15,000
Project Management: Fishing Authority and Trainers

Project Purpose: To train local fisherman in improving the efficiency of existing fishing techniques inclusive of other viable fishing techniques that are applicable and practical to Yap State.

Project Goal: To upgrade the skills of existing fishermen and provide incentive for others to engage in the fishing sector.

Production Process: Since consultant from private organizations are very costly, Yap Fishing Authority will seek trainers from non-profit organizations such as South Pacific Commission, ESCAP, and others. The requested funds will be mainly utilized for traveling, fishing gear, logistic supports, etc.

A thirty to sixty day workshop/training is to be conducted every year during the project duration to those interested in a particular fishing techniques. Priority of fishing techniques for training purposes will be given to the most common fishing techniques currently being practiced in Yap and also at the discretion of the Fishing Authority Management or Yap State in general as they see fit.

Project Cost:	1st year	2nd year	3rd year	4th year	5th year
	$15,000	$15,000	$15,000	$15,000	$15,000

Project: Yap Market Survey
Implementing Agency: Fishing Authority
Location: Yap State
Project Duration: 5 years Total Investment: (1 yr.) $2,000
Project Management: Fishing Authority

Project Purpose: To analyze the marketing of Yap State Marine Resource products in Yap itself as well as the export markets like Guam, Republic of Palau and even Hawaii.

Project Goal: To produce a market study for Yap Marine Resource products in the first 2 months of every year within the duration of the project.

Production Process: Director, Fishing Authority or a staff of either Fishing Authority or Marine Resources Division designated by both the Director of Fishing Authority and State R & D will stage the study by visiting the various market outlets of Yap Marine Resource Products. Information gathering for the report should not take more than a month at which time the documentation of the study should be in process to be completed by the second month. The fund will be used for traveling, purchasing necessary supplies, logistic supports, etc.

Project Cost:	1st year	2nd year	3rd year	4th year	5th year
	$2,000	$2,000	$2,000	$2,000	$2,000

Project: Yap Fisheries Development Study
Implementing Agency: Fishing Authority
Location: Yap State
Project Duration: 1 year Total Investment: (1 yr.) $25,000
Project Management: Consultant & Fishing Authority

Project Purpose: To determine Yap State Marine Resource potentials with respect to storage facilities, transportation system, and maketing network.

Project Goal: To produce a comprehensive study on Yap State potentials for fisheries development in one year.

Production Process: A consultant in fisheries development should not be difficult to locate and have him or her on Yap within six months. Surveys, interviews, and other data collection pertinent in formulating such study should be completed in three months leaving the rest of the year for writing and documenting the study.

At least one local counterpart will be working along with the consultant to be trained in the process and also serve as a guide to the consultant to help in expediting the completion of the project. They will be working under the coordination of the State Fishing Authority.

Project Cost: $25,000

Project: Marine Resources Survey and Research
Implementing Agency: Division of Marine Resources (Mr. Div)
Location: Colonia
Project Duration: Oct. - Sept. 87 Total Investment: (1 yr.) $100,000
Project Management: The project will be based on contractual services administered by Marine Resources Division.

Project Purpose: To conduct surveys, research and feasibility studies as an opening to commercial development of Yap State's marine resources.

Project Description and Justification: Yap States greates potential and resources for economic development lies within marine resources. The capability of the Mr. Div. to conduct surveys and research will be limited, because of staffing. Most of the surveys and research will be done on a contractual basis, which also include training.

The following surveys and feasibility studies are already identified:

Surveys	:	Mariculture, Reef Fish Potential, species, spawing seasons, amount of tuna bait, breeding of certain marine species, precious coral, fish poison.
Feasibility Studies	:	Trochus, Trepang, Shark Fins, Fishpond; Milk Fish, Shrimp and Crabs, Turtle Hatchery and Lobster.

Of this, four studies are identified to be undertaken in 1983 by the new chief of Mr. Div., who budgeted for in 1983 supplement request. The rest including additional surveys and studies will be coordinated within the long term marine resources development plan.

Land use requirements: None

Maintenance:

Training: Training will be included as a part of all contracts on survey and research.

Time schedule

	1983	1984	1985	1986	1987
Mariculture	———				
Fishpond	———				
Reef fish potential	———				
Tuna bait	———				

Budget (1983 prices)

	1983	1984	1985	1986	1987	Total
Contractual servs.	100,000	100,000	100,000	50,000	50,000	-
of which:						
Mariculture survey	50,000					
Fishpond study	20,000					
Reef fish poten.	20,000					
Tuna bait	10,000					
Total	100,000	100,000	100,000	50,000	50,000	400,000

Manpower (man month)

	1983	1984	1985	1986	1987
Mr. Div.:					
Identifying, Adm., Monitoring	6	6	6	6	6
Counterpart	6	6	6	6	6

Project: Tuna Transhipment (2nd Phase Dublon Fisheries Complex)
Implementing Agency: R & D Marine Resources
Location: Dublon
Project Duration: 5 years Total Investment: (1 yr.) $2,000,000
Project Management: To be determined

Project Purpose: To establish transhipment facilities at the Dublon Fisheries Complex.

Project Description and Justification: Establish facilities at the Dublon Fisheries Complex Dock to unload and warehouse at proper temperatures cathces of high seas tuna seining fleet to be containerized for transhipment to outside markets.

Time Schedule	1983	1984	1985	1986	1987	
	-	-	-	-	-	
Budget (1983 Prices)	**1983**	**1984**	**1985**	**1986**	**1987**	**Total**
	2,000,000	2,000,000	-	-	-	4,000,000
Manpower (Man months)	**1983**	**1984**	**1985**	**1986**	**1987**	**Total**
	-	-	-	-	-	-

Project: Capital Support for Fishing Cooperatives
Implementing Agency: R & D Marines Resources
Location: Truk
Project Duration: 5 years Total Investment: (1 yr.) $100,000
Project Management: Economic Development Loan Bank and/or the Micronesia Maritime Authority

Project Purpose: To make available liquid capital for loans to the local fishing cooperatives.

Project Description and Justification: Capital to make available loans for Truk Fishing Cooperatives will be obtained in the form of ready costs from the Economic Development Loan Bank and in the form of goods and services from the Micronesian Maritime Authority. This agency will procure and service the equipment that the cooperatives will purchase with their loan money.

Time Schedule	1983	1984	1985	1986	1987	
	-	-	-	-	-	
Budget (1983 Prices)	1983	1984	1985	1986	1987	Total
	100,000	150,000	200,000	200,000	200,000	850,000
Manpower (Man months)	1983	1984	1985	1986	1987	Total
	-	-	-	-	-	-

Project: Outer Island Bait Production Assessment
Implementing Agency: R & D Marine Resources
Location: Truk State Outer Islands
Project Duration: 1 year Total Investment: (1 yr.) $155,238
Project Management: R & D Marine Resources

Project Purpose: To assess the bait supply in the Outer Islands of the State of Truk.

Project Description and Justification: The Outer Islands of the State of Truk will be searched for usable supplies of live bait. A variety of bait capture techniques will be utilized and the project will directly employ atoll residents for its operation. Cost of the Project will be shared between the State of Truk and the Pacific Tuna Development Foundation.

Time Schedule	1983	1984	1985	1986	1987	
	-	-	-	-	-	
Budget (1983 Prices)	**1983**	**1984**	**1985**	**1986**	**1987**	**Total**
	155,238	-	-	-	-	-
Manpower (Man months)	**1983**	**1984**	**1985**	**1986**	**1987**	**Total**
	-	-	-	-	-	-

Project: Repair of Cold Storage & Ice Making Machines
Implementing Agency: Marine Resources Division, R & D
Location: Kolonia, Ponape State
Project Duration: One Year Total Investment: $76,800
Project Management: Marine Resources, R & D

Project Purpose: To make available enough cold storage facilities and the for the local fishermen.

Project Goal: To repair the existing 100-ton cold storage facility situated in Kolonia and to also repair the existing ice-making machines.

Production Process: Recruitment a competent refrigeration mechanic, preferable FSM citizen, and acquisition of the necessary spare parts in three months subsequent to the availability of the requested funding.

Operable ice-making machines and cold storage facilities is a must for promoting fisheries development. The poor state of cold storage and minimal ice production is a detriment to the most promising commercial resource available to the State of Ponape.

The project's maintenance and staff salary in the consequent years will be supported through the revenues received from the project.

Implementation Schedule: Fiscal Year 1982

Project Costs:

Parts for Ice Making Machines:	$10,000 x 2 machines	$20,000
Parts for the freezer:	$40,000	40,000
Salary		16,800
		$76,800

Time Schedule	1983	1984	1985	1986	1987	
	-	-	-	-	-	
Budget (1983 Prices)	1983	1984	1985	1986	1987	Total
	76,800	-	-	-	-	-
Manpower (Man months)	1983	1984	1985	1986	1987	Total
	24	-	-	-	-	-

Project: Village Development Program
Implementing Agency: FSM Development Bank & State R & D
Location: All Municipalities Ponape
Project Duration: 1 yr. & Continuous Total Investment: $1,000,000
Project Management: FSM Development Bank and State R & D

Project Purpose: The purpose of the project is to provide repayable loans to small projects in the communities around Ponape in Agriculture, small Business, Fisheries, Livestock production and small scale manufacturing.

Project Goal: To assist in small scale development in the village economy to increase income of villagers to set up not less than 20 small enterprises and not more than 60 per year and to help them operate such enterprises until they are fully operational or they have integrated into other businesses.

Process of Production: The State R & D office will provide technical assistance in the production processes the villagers are willing to engate in.

They will in time refer them to the FSM Development Bank which will then assist them in setting up business papers and loan applications. Upon approval of the loans the villagers then engage in the enterprises. The bank will continue to assist the small business as long as there is an outstanding account.

The village projects so far given to the state number 145. Perhaps it will take two funding cycles, 2 years or less to fund all these projects.

These projects are:

Taro	32	Sawmilling	3
Piggery	24	Boat Building	2
Vegetables	19	Sakau	2
Poultry Broilers	14	Motel	2
Fishing	12	Sugar Cane	1
Poultry (eggs)	10	Furniture	1
Pepper	6	Handicraft	1
Tapioca	5	Salt Making	1
Yams	5	Cattle	1
Banana	4		

The estimated amount for each project is about 15,000 per project so to provide assistance to 60 or so projects per year will be about $1,000,000. This fund can be expanded when the need arises but as the loans as paid back more loans could be serviced.

Project: Deep Bottom Fishing (Deep Water Snappers) Training
Implementing Agency: Ponape State EDA
Location: Ponape State
Project Duration: 1 yr. & Continuous Total Investment: $11,429
Project Management: EDA & Trainer

Project Purpose: To train the local fisherman in deer bottom fishing technique as an avenue not only to exploit the deep bottom fishes such as deep water snappers but the possibility of generating income and employment from such fishing method.

Project Goal: To familiarize at least 12 local fisherman with the deep bottom fishing techniques in the 3 weeks of training. That way the trained local fishermen can continue the training process throughout the year if enough fishermen show interest and also be capable of fishing on their own after the training is ceased.

Production Process: Acquisition of the trainer from Fiji and the fishing gear is going to take about 2 months. Once the trainer and the fishing are on hand, the training will proceed with the interested participant. Announcement of the training on the radio should be adequately done during the first 2 months of trainer and gear acquisition.

The training is proposed to be done with the 82 ft. Ponape State owned boat. The trainer and about 3 local fishermen will be utilized per fishing trip. The same 3 local fishermen should attend at least 3 fishing trip in order to be familiarized with the deep bottom fishing techniques.

The fishing operation will be primarily similar to the regular deep bottom fishing, departing in the wining to locate the fishing sites, fish for at least 5 houses, and return the next day. Since the trainer will be compensated on consultant basis, the proceed from the sale of the catch will be distributed among the fishermen and the vessel according to the terms originally agreed.

It is estimated that deep bottom fishing will average at least 180 lbs. per fishing trip.

Project Cost:

Trainer ($30/yr. x 21 days) + + $600 Plane Ticket	$ 5,640
Fishing Gear	2,000
Bait Grinder	30
Depreciation of Boat	1,000
Fuel (5 gal./trip x $1.50 x 160 trips/yr.)	1,200
Maintenance & Repair	200
Ice 100 lbs. x .02 x 160 trips	320
Replacement of Fishing Gear 10%	1,039
	$11,429

Project: Marketing, Distribution and Storage Network
Implementing Agency: State R&D or EDA or a Public Corporation
Location: Ponape
Project Duration: 1 Year & Continuous Total Investment: $165,153
Project Management: State R&D or EDA or Public Corporation

Project Purpose: The purpose of the project is to provide an aggragation point for purchasing, storing and transfering of farm products, fish products and other products for local consumption and export.

Project Goals: The goal of this project would be to establish two points. One in Madolenihmw around Lukap area and one in the Ronkitti area to serve wholesale movement of products for redistribution around Ponape and for export.

Production Process: The project will essentially consist of storage warehouses, which will serve as redistribution points for local products needed elsewhere on the island and for export. People in the villages could bring their local products for sale at these points, there they will be graded or sorted and paid for.

The warehousing operation will in turn store it in chilled containers to await transfer to other points around the island of the products could be delivered directly to ships to other states or for export.

The facility will be able to store copra, lumber and other dry goods and perishable products such as vegetables, meats, and fish. These could then be transfered as they are needed.

Manpower will consist of the following:

3 warehouse managers
3 drivers
3 laborers

Each warehouse will have one warehouse manager and 1 laborer and one driver.

Space required for the project will be for a 30x60 Pole constructed storage building with wire fencing and a outdoor storage yard.

Equipments will include the following:

2 trailer Jockeys
4 trailer racks
3 hand lifts
2 lo HP generator

Other support requirement-

4 gallons ADO/Jockey/day x 260 x 2 =
365 x 8 gallons/day each generator x 2 =
3 HF vase stations & 2 portables =

Land preparation costs and costs of construction is built into the building cost estimate.

Training and education needed for this project will be minimal.

Cost of System-

Manpower-		
3 Warehousemen	$6,000 each	$ 18,000
3 Drivers	4,000 each	12,000
3 Laborers	3,000 each	9,000
Buildings		
2x30x60x$14		50,400
2 trailer Jockeys	16,000 each	32,000
4 trailers vack	4,000 each	16,000
2 hand lift	150 each	300
2 10 HP generator	7,000 each	14,000
Fuel		
365x8x2x1.32		7,708
260x4x2x1.32		2,745
Radio		
3 Sets at	2,000 each	6,000
		$ 168,153

Project: Fisheries Complex
Implementing Agency: Construction to be out on a contract
Location: Lelu Kosrae
Project Duration: Total Investment: $158,000
Project Management: Supervision to be provided by the government of Kosrae

Project Purpose: To provide adequate storage, market facility, office space, ice making, fueling repair facility. FAD fabrication and repair facility to support fisheries activities in Kosrae.

Project Goal: In the initial year the goal of the project would be to build a a space to accommodate a 3 twenty-ton freezers, a 1 ton crushed salt water ice maker with osmotic filters, and two 250-kg blast freezers. In the second year space will be provided for a small shipway and boat repair shop and a shop for fabricating and repairing fish aggregating devices.

Process of Production.

A&E
Site prep fill
dock face & excavation
foundation -
slab -
structure -
roof
walls-
exterior - Doors
Interior partitions
ceilings -
paint -
floor tile -
mechanical -
electrical -
furnishings -

The organization and manpower requirements will be the responsibility of the contractor.

The amount of space required will be 120 ft. dock face, the building will be 40' x 60' and a roof over yard to handle a 30-ton freezer and 6 containers with plug in outlets for the freezers.

Communication requirement for the center will include a VHF base station and portables on the boats.

Training requirement should include training in refrigeration. Initially 4 persons will be recruited to take correspondence courses. The best one should then be selected for overseas training.

Costs:

A & E	$40,000	$ 40,000
Construction:		
Bldg.= (40 x 60) at $20/ft^2		48,000
Roof over yd-20^h x 48' at $14/ft^2		13,500
Dock face - 120 ft.		6,000
Freezer 20 tons		40,000
parts & supplies 20%		8,000
250 kg Blast Freezer		40,000
Ice Machine		20,000
Trailer ring (used)		20,000
VHF Radios		15,000
Pickup (to be acquired under foreign aid)		
		$215,500