

(4) システム開発

1) 本分野では、以下のコンピューターシステムの改善を活動内容とする。

① 技術計算プログラム

② データベース

2) 上記①及び②で扱う内容は、前述の3-2-1(1)~(3)の活動を支援するものとし、

a) 開発、改善された基準等の一部として利用されるもの、b) 開発、改善を実施する際に必要とされるものに限定する。これは、システムと一口にいても、その範囲、対象が多岐にわたること、利用されないものは結局、時間と労力の無駄となること、がその理由である。

3) インドネシア側のニーズと協力内容の整理

① 具体的な内容については詳細項目が確定されていないが、インドネシア側要望は長期調査の時点で提示されている(長期調査報告書付属資料参照)。しかし、これらは、以下の課題を有しており、そのまま日本側協力として取り込むことができないものであった。

a) 「何をするため(活動)に何が必要か(投入)」の整理がされていないため機材の購入と新規のシステム構築にインドネシア側の関心が強く、単なる機材供与が目的となってしまう、実際に利用できなくなる可能性が高い

b) 要望されている項目は、すでに公共事業省内で利用されている可能性がある等、新規に開発あるいは改良する必要性が不明

c) 誰が、どのような目的で利用するのか整理されていないため、本当に必要であるのか不明、したがって、将来的に利用されるのか疑問

d) カウンターパートの力量等不明であり、5年間で実施できるのか不明

e) 各項目の内容(扱うデータ量、どの程度のレベルとするか)が不明

f) また、分野別協議において、本省の水資源開発総局官房の情報・技術管理部からは、i)すでにデータベースネットワークの構想が公共事業省にあり本プロジェクトでこれらすべてのデータベースを新規に構築する必要はないこと、ii)項目によってはコストが高くなり(機材・ソフトの購入とその維持・管理)、IESCのセンターでは対応できないこと、各項目の内容を整理する必要のあること等がIESCのスタッフに詰問される場面もあった。

② 調査団からは、日本側協力としての活動計画を策定するために、支援する3つの分野それぞれについて、プロジェクトサイト(水資源開発総局、IESC、モデルサテライト)別に、a)利用者(User)が誰か、b)必要とされるソフトは何か、c)したがって必要となるハードは何か、についてインドネシア側で整理するよう依頼した

結果、インドネシア側から回答があった。

概要は後述の参考表のとおり(具体的には付属資料(3)-⑥参照)であるが、インドネシア側で十分な検討が行われていない暫定的なものである。専門家は、活動計画(小項目と内容)を策定するために、まず、これを整理する必要がある。

- 4) 日本側(専門家)は、まず対象とする技術計算プログラム、データベースの項目と内容をインドネシア側を含め十分検討・協議し、タイムスケジュールを設定した計画を策定し、必要とされるハード・ソフトを併せたシステム設計と機材の導入計画を企画するところから活動が始まる。計画策定後は、これに沿って、既存システムの改善または新規システム紹介と導入を行い、インドネシア側で自ら利用するシステム、ソフトの改良をカウンターパートに技術指導、助言を実施していく。

なお、カウンターパートはIESCスタッフのほか、データベースについては総局官房情報・技術管理部から選定されるが、技術計算プログラムについてはスペースシャリストがいないため現在の灌漑1局から選定される。

5) 留意点

① 本省とIESCとの関係

前述のように分野別協議において本省サイドからIESCに内容の詰問がなされるなど、IESCスタッフは公共事業省での統一システムとの関係を考慮していない。これは情報がIESCに届いていないか、または情報は届いていても理解できないか、が理由であろうが、将来的な利・活用のためには本省との連携を保ち情報の交換と協議をきちんと行っていく必要がある。現状ではそれが十分でないと思われる。

- ② 新規のプログラム開発を行うよりも既存のパッケージソフトの活用によりシステムのスペースシャリスト以外でも利用でき、改訂可能な簡易なものを心がける。利用者は州政府の職員も含まれるからである。

- ③ 新しい機材の導入により旧CGSCで蓄積されたデータやソフトのコンバージョンがまず必要となると考えられる。これらは本来インドネシア側で実施するものであるが、まずその手法を本プロジェクトで作成するシステムに併せて専門家が指導する必要がある。

④ 機材等システム構成について

a) 公共事業省内の情報管理システム(MIS)構想との整合性

水資源開発総局官房情報・技術管理部長(システム開発ワーキンググループの議長)から分野別協議の席上、公共事業省内での「情報管理システム(Management Information System)」(データベースネットワーク)に関する構想が板書

及び口頭にて紹介された。その概念図を後掲するが、その概要は以下のとおりである。

- i) 27州及び7つの特別事業の現場と情報処理・図化センター(PUSDATA)を各局の情報・技術管理部(INTAL)を通じてオンラインでデータを伝送(Communicate)する。
- ii) これはデータベースであり本プロジェクトで扱う技術計算プログラムは省全体ではなく個別に利用するものなので、このネットワークには含まれていないし、今後もその必要はないと考えられる。
- iii) 水資源開発総局で8割、住宅総局ではほぼすべて、道路総局で7割が開発済みであり、1994年度中には運用が開始されるであろう。
- iv) I E S C(プカシ市のセンター)は予算の制約等もあり、現在このネットワークには含まれていない。

この構想が本当に順調に稼働するのか実態は不明であるが、将来的にはこのネットワークとの連携・接続も考慮に入れ、重複のないデータベースの改良・作成に限定していくとともに、機材(ハード・ソフト)の選定もこのM I Sとのデータ利用が図られるように整合性を持たせる必要がある。

b) 将来的なメンテナンスと現地調達

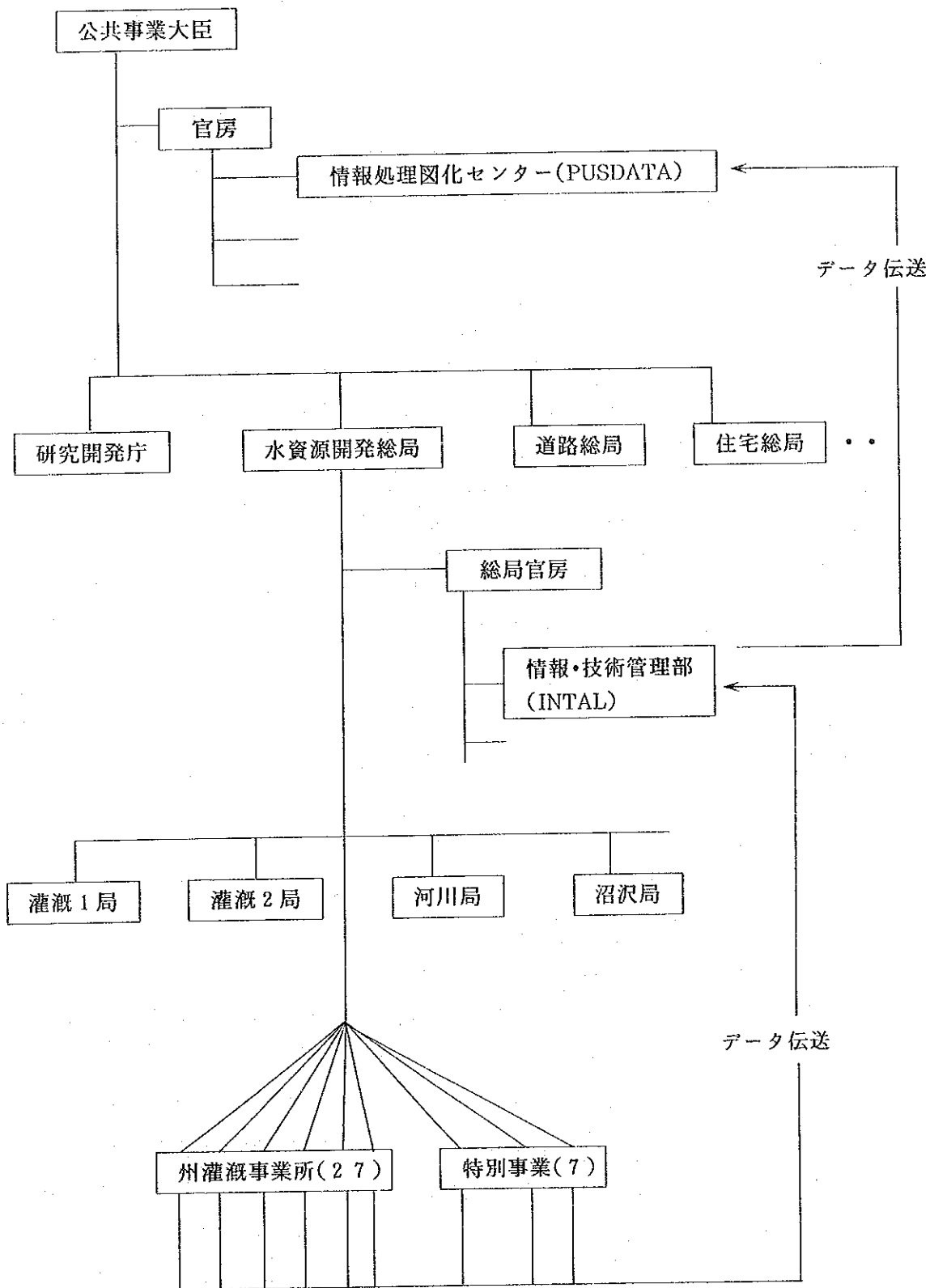
システム構築及び機材選定にあたっては、インドネシア側で日本側協力終了後も利用・修理・買い換えができるように、購入単価、維持・管理コストの高くないものを選定し(システムも従来の大型コンピューターをメインフレームとする方式ではなく、ワークステーション、パソコンの組合せにより低コストで買い換えの容易なものとする)、実際の購入もインドネシア国内で可能な限り調達することが望ましい。インドネシア側からもインドネシアで調達して欲しいとの希望が出されている。

表3-2-4 参考：インドネシア側要望のシステム整理表(仮訳)

中項目	小項目	利用者		
		水資源開発総局本部	IESC	モデルサテライト
調査・計画・設計				
技術計算プログラム	1)水理解析プログラム 2)構造設計プログラム 3)地理情報システム(GIS) 4)排水解析 5)工業経済	灌漑局、河川局、水研 同上 灌漑局、情管部、水研 灌漑局、沼沢局 計画局	○ ○ ○ × ×	○ ○ ○ ○ ×
データベース	1)水利データ 2)土壌データ 3)数値図化(?) 4)地下水データ 5)地理データ(?) 6)気象データ 7)灌漑事業台帳 8)研修データ	計画局、情管部、水研 灌漑局、河川局 灌漑局、河川局、水研 同上 灌漑局、水研 同上 灌漑局、河川局、水研 灌漑局、情管部 研修部	○ ○ ○ ○ ○ ○ × ○	○ ○ ○ ○ ○ ○ × ○
維持・管理				
技術計算プログラム	1)水収支解析 2)水配分システム 3)要水効率性(?)	灌漑局 灌漑局 灌漑局	○ ○ ○	○ ○ ○
データベース	1)灌漑システム台帳 2)数値図化(?) 3)受益者台帳	灌漑局、情管部 同上 灌漑局	○ ○ ○	○ ○ ×
修復・更新				
技術計算プログラム	1)水理解析プログラム 2)構造設計プログラム	灌漑局、沼沢局 灌漑局	○ ○	○ ○
データベース	1)水理データ 2)土壌データ 3)数値図化(?) 4)地下水データ 5)地理データ(?) 6)気象データ	灌漑局、沼沢局 同上 灌漑局 同上 同上 灌漑局、沼沢局	○ ○ ○ ○ ○ ○	○ ○ ○ ○ ○ ○
ハードウェア	1)サン・ワークステーション 2)パソコン 3)プロッター	— 5セット —	2セット 2セット —	— 2セット 2セット

(備考)(1)灌漑局は灌漑1局及び2局を指す
 (2)水研：研究開発庁水資源開発研究所
 (3)情管部：水資源総局総局官房情報・技術管理部
 (4)研修部：研修・教育センター水資源開発担当研修部(要確認)
 (5)正確には原典の付属資料(3)-⑥を参照

図3-2-5 公共事業省内の情報管理システム構想



3-2-2 研修

本分野での活動は、3分野で改善または開発された技術基準、ガイドライン、マニュアル(システム開発での成果を含む)を公共事業省及び州政府の灌漑技術者へ普及することに主眼を置いた研修の実施となる。

(1) 活動内容

初年度目から研修カリキュラム、教材等の作成を行い、2年度目から、これらを利用した研修の実施を行う。

研修教材は前述の(1)調査・計画・設計、維持・管理、修復・更新分野で開発または改善された技術基準、ガイドライン、マニュアル、(2)これらを受講生の能力に合わせて改良したテキスト等が考えられる。

これらのほかに、(3)将来的に基準等に盛り込まれる内容で改善された個別技術に関する研修、(4)基本的な教科書を利用した研修、(5)システム分野で導入されるデータベースや技術計算プログラムの利用についての研修等が想定されるが、プロジェクトの活動状況を見ながら毎年見直ししていくことが妥当である。

インドネシア側で計画している研修コースは下記のとおりで長期調査時点から変わっていない。他方、日本側ですべての研修費用の負担はできないこと、日本人専門家の協力できる範囲内(過重な負担とならない範囲で教材作成等へ対応、受講者によってはインドネシア語でしかコミュニケーションが図れない)に配慮して日本側協力としての研修計画として見直す必要がある。なお、インドネシア側独自で実施するものは本プロジェクトに支障なければ、あえて中止させるものではない。

(2) 日本側協力体制

日本側の対応は分野別の専門家が該当する内容を担当し、企画、運営についての協議をリーダー、業務調整が中心となって行う。

(3) 実施にあたっての留意事項

- 1) 研修の実施については、これまでのCGSCでの経験や第三国研修の実績があることから基本的なノウハウは修得されていると考えられるので実施、運営はインドネシア側を主体とする。ただし、研修内容となる調査・計画・設計、維持・管理、修復・更新といった分野はIESC職員にとって本プロジェクトで初めて扱う内容であることから、この面で、例えば教材やカリキュラムの作成での指導・助言が中心となろう。
- 2) インドネシア側からは農家の代表や水利組合を対象にした水管理等の研修が要望されているが、制度、組織運営については日本側協力として扱うことは適当でなく、また対象者の範囲に歯止めがかけられないこと等から純粋な技術的事項についての指導・

助言にとどめ、インドネシア側が実施するようにすべきである。なお、この点について実施協議調査団から分野別協議の際に、マンパワー、協力スキーム及び予算等の制約から日本側協力では研修対象者を中央政府または州政府の公務員(official)までしか対応できないとの言い方で説明を行い、インドネシア側は了解している。ただし、教材の作成への協力は強く要望された。

- 3) インドネシア側計画にある施工分野の研修コースは今回の日本側協力には含めない。必要であればインドネシア側で実施する。(CGSCの協力課題であったため)

表3-2-6 参考：インドネシア側研修計画案

研修コース名	受講者 レベル	人数 注1	期間	年間実施 回数	
(IESCで実施)					
測量・図化コース	上級	30	3週間	1回	
設計コース	上級	30	3週間	1回	
施工管理コース	上級	30	1か月	1回	注2
	初級	35	1.5か月	2回	
維持・管理コース (灌漑施設管理)	上級	30	3週間	2回	
灌漑指導者育成コース	上級	30	3週間	2回	
マネージメントコース	上級	30	2週間	1回	
その他 (システム工学等)	システムアナリスト プログラマー等	10	2週間	1回	
(各モデルサテライトで実施：注3)					
水管理コース	県職員	40	6週間	6回	注4
	村落職員	40	6週間	4回	
水管理・農民組織管理	水利組合	40	2週間	8回	
水利組合強化・組織化	水利組合 中核農家 等	20	13日	8回	
(以下初級)					
製図・積算コース		20	2週間	1回	
測量・図化コース	調査員	20	3週間	1回	
設計	設計士	20	2週間	1回	

(備考)注1：上級とは経験年数5年以上、初級とは経験年数5年以下を指す

注2：CGSCプロジェクトで協力した内容であり本プロジェクトの対象外

注3：研修対象者等は合計で本表の2倍となる(モデルサテライトが2ヶ所であるため)

注4：日本側では実施しない

4. その他特記すべき事項

4-1 協力開始直後の活動準備等

(1) 水資源開発総局の組織改編の状況把握と実施体制の再確認

(カウンターパート等関係者の明確化等)

これまでの情報では、1994年度当初に水資源開発総局の組織改編が予定されているとのことなので、早期に改正令等根拠法令を入手するとともに、各部局の機能(権限、業務内容)を把握する必要がある。また、これに併せてカウンターパートや運営グループのメンバー等がどう変更されるのかを明確にし、現行のR/D及びミニッツとの対応を整理し、これらの改訂についても検討を開始する必要がある。

また、この組織改編は直接IESCには影響はないと思われるが、IESCの実施体制、更にはモデルサテライトの運営体制等についてもミニッツ等の内容で準備されているかどうか、また、変更する必要の有無についても確認する必要がある。

(2) オフィススペース等の確認

電話、秘書、備品(机、椅子等)、オフィススペースは赴任後、直ちに確保するよう努める必要がある。

特に水資源開発総局内の長期専門家用オフィススペースが確保されるよう確認する。上記の総局改編に併せて技術局が建物のどこへ新設されるかによって当初予定されたスペースが確保できるかどうかチェックしておく必要がある。

(3) 5か年計画の策定

1) 用語の明確化(Terminology)

5か年計画を策定するにあたり用語の定義を明確にする必要がある。特に技術基準、ガイドライン、マニュアルについては、それぞれの区別をきちんと整理しておかないと、日本側とインドネシア側で認識の齟齬が生じる可能性もある。

2) 活動計画

① まず5年間で実施する基準、ガイドライン等の開発、改善等の詳細内容(工種)をタイムスケジュールとして明確にする。(詳細暫定実施計画の策定)

現在のミニッツに盛り込まれた暫定実施計画はR/Dにあるような大きな項目で設定されており、具体的な詳細活動項目として詳細に整理される必要がある。インドネシア側のリクエストは付属資料(3)-⑤に整理されているが、これはタイムスケジュールが明確にされていないこと、したがって、5年間で実施可能な内容にはなっていないため、現地調査、インドネシア側実施体制、カウンターパートができるかどうかと

いった検討を踏まえてインドネシア側と協議していく必要がある。特に I E S C のスタッフは本プロジェクトで扱う分野は、これまで経験がないことから、無理な計画設定とならないようにしなければならない。

- ② システム開発、研修についても上記の整理を踏まえて無理のないタイムスケジュールとして整理する。

3) 投入計画

5年間の活動内容が明確になったうえで、これら活動に必要な5年間の投入計画を策定する。これは日本側だけでなくインドネシア側のローカルコスト負担、人員配置も併せて協議していくことがベターであり、これに無理があれば、活動計画を改めて見直す必要がある。

日本側投入計画としては、短期専門家派遣、機材供与、本邦研修員受入れ、ローカルコスト負担の5か年計画を考える。但し、毎年度の予算により制約されるので、計画内容どおりに実施できないこともあり得るので、インドネシア側への約束として扱うことはできない点、留意する必要がある。

この中で特に機材については、単年度だけでは完成しないようなシステムとなる場合は必要機材についての複数年度にわたる整備計画のもとに機材が供与される必要がある。また、機材なしでは全く活動できない場合にはプロジェクトの初期段階で供与したり、後半に活動のピークのある内容は3年度目以降の機材供与とする等、年度間の配分も考慮する必要がある。特にシステム開発分野ではワークステーション等単価の高い機材がある場合のほか、車輛、コンピューターについては5か年計画を整理する必要がある。

なお、インドネシア側から機材が要望されたが(付属資料(3)-④参照)、これらはプロジェクト活動との関係が整理されていない。

(4) 初年度目の活動計画と投入計画

5年間の活動及び計画が策定された後、年度別の具体的な活動計画・投入計画を立案するが、まず初年度の活動及び投入計画を明確にする。専門家赴任後、改めて再検討されるものであるが、初年度に可能と思われる投入は以下のとおり。

① 短期専門家

構造物診断、材料試験等で2名程度

② 機材供与

現地調査用車輛等を含めプロジェクト初期に必要な機材、2千万円弱

一般的には車輛、コピー機、パソコンが必要である。専門的な機器については十分な検討が必要

③ 研修員

2週間程度で2名程度の視察型研修。水資源開発総局本部の中からもプロジェクト開始時点で日本の現状を理解する内容の人選がよい(例：灌漑1局計画・設計部長)。

④ ローカルコスト負担

一般現地業務費による運営支援。プロジェクト開始当初は機材も供与されていないため、これまでの無償資金協力、CGSCプロジェクト等で供与された機材を活用するが、専門家全員が同時に利用できるような車輛数がないため、車輛借り上げ費等を考慮する必要がある。

4-2 今後の課題

- (1) 詳細活動項目と内容を含めた5か年の活動計画及び投入計画はプロジェクト開始から半年後に派遣される計画打合せ調査団において、インドネシア側と協議・確定する必要があるため、それまでに固めておく。
- (2) 中堅技術者研修等に必要なローカルコスト負担は、特別措置としてR/Dに明記する必要がある、そのためには5年間の中で実施計画を明確にしておかなければならない。

付 属 資 料

- (1) 討議議事録
- (2) ミニッツ（協力実施に関する覚書き）
- (3) 現地入手資料
 - ① I E S C の組織構成（スタッフと機能）
 - ② モデルサテライト実施体制（スタッフと機能等）
 - ③ 州政府組織図（公共事業関係を主体）
 - ④ 機材導入計画（インドネシア側要望）
 - a) 総括表
 - b) 調査・計画・設計
 - c) 維持・管理
 - d) 修復・更新
 - e) システム開発
 - f) 研 修
 - ⑤ 詳細活動項目（インドネシア側要望）
 - ⑥ システム整理表（インドネシア側要望）

(1) 討議議事録

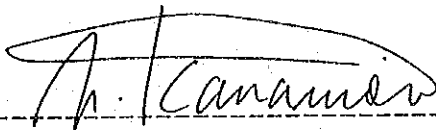
THE RECORD OF DISCUSSIONS BETWEEN THE JAPANESE
IMPLEMENTATION SURVEY TEAM AND THE
AUTHORITIES CONCERNED OF THE GOVERNMENT OF
THE REPUBLIC OF INDONESIA
ON THE JAPANESE TECHNICAL COOPERATION
FOR THE IRRIGATION ENGINEERING SERVICE CENTER PROJECT

The Japanese Implementation Survey Team (hereinafter referred to as "the Team") organized by the Japan International Cooperation Agency (hereinafter referred to as "JICA") and headed by Mr. Nobuo KANAMORI, visited the Republic of Indonesia from February 27, 1994 to March 9, 1994 for the purpose of working out the details of the technical cooperation program concerning the Irrigation Engineering Service Center Project in the Republic of Indonesia.

During its stay in the Republic of Indonesia, the Team exchanged views and had a series of discussions with the Indonesian authorities concerned in respect of the desirable measures to be taken by both Governments for the successful implementation of the above-mentioned Project.

As a result of the discussions, the Team and the Indonesian authorities concerned agreed to recommend to their respective Governments the matters referred to in the document attached hereto.

Jakarta, March 8, 1994



Mr. Nobuo KANAMORI
Leader,
Implementation Survey Team
Japan International Cooperation
Agency, Japan



Mr. Soeparmono
Director General of
Water Resources Development,
Ministry of Public Works,
Republic of Indonesia

THE ATTACHED DOCUMENT

I. COOPERATION BETWEEN BOTH GOVERNMENTS

1. The Government of the Republic of Indonesia will implement the Irrigation Engineering Service Center Project (hereinafter referred to as "the Project") in cooperation with the Government of Japan.
2. The Project will be implemented in accordance with the Master Plan which is given in Annex I.

II. MEASURES TO BE TAKEN BY THE GOVERNMENT OF JAPAN

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

1. DISPATCH OF THE JAPANESE EXPERTS
The Government of Japan will provide the services of the Japanese experts as listed in Annex II.
2. PROVISION OF MACHINERY AND EQUIPMENT
The Government of Japan will provide such machinery, equipment and other materials (hereinafter referred to as "the Equipment") necessary for the implementation of the Project as listed in Annex III. The Equipment will become the property of the Government of the Republic of Indonesia upon being delivered C. I. F. to the Indonesian authorities concerned at the ports and/or airports of disembarkation.
3. TRAINING OF INDONESIAN PERSONNEL IN JAPAN
The Government of Japan will receive the Indonesian personnel connected with the Project for technical training in Japan.

III. MEASURES TO BE TAKEN BY THE GOVERNMENT OF THE REPUBLIC OF INDONESIA

1. The Government of the Republic of Indonesia will take necessary measures to ensure that the self-reliant operation of the Project will be sustained during and after the period of Japanese technical cooperation, through the full and active involvement in the Project by all related authorities, beneficiary groups and institutions.
2. The Government of the Republic of Indonesia will ensure that the technologies and knowledge acquired by the Indonesian nationals as a result of the Japanese technical cooperation will contribute to the economic and social development of the Republic of Indonesia.

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

- (3) Running expenses necessary for the implementation of the Project.

IV. ADMINISTRATION OF THE PROJECT

1. The Director General, Directorate General of Water Resources Development (hereinafter referred to as "DGWRD"), Ministry of Public Works (hereinafter referred to as "MPW") will bear overall responsibility for the administration and implementation of the Project.
2. The Director, the Directorate of Irrigation I, DGWRD, MPW, as the Project Director, will be responsible for the administration and implementation of the Project.
3. The Head, the Irrigation Engineering Service Center (hereinafter referred to as "IESC"), DGWRD, MPW, as the Project Manager, will be responsible for the managerial and technical matters of the Project.
4. The Japanese Team Leader will provide necessary recommendations and advice to the Director General of DGWRD, Project Director and the Project Manager on any matters pertaining to the implementation of the Project.
5. The Japanese experts will give necessary technical guidance and advice to the Indonesian counterpart personnel on technical matters pertaining to the implementation of the Project.
6. For the effective and successful implementation of technical cooperation for the Project, a Joint Coordinating Committee will be established whose functions and composition are described in Annex VI.

V. JOINT EVALUATION

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

VI. CLAIMS AGAINST JAPANESE EXPERTS

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

VII. MUTUAL CONSULTATION

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

VIII. TERM OF COOPERATION

The duration of the technical cooperation for the Project under this Attached Document will be five (5) years from June 10, 1994.

ANNEX I. MASTER PLAN

1. Project Purpose

The technical standard(s) as well as guideline(s) and manual(s) necessary for the appropriate implementation of irrigation projects will be continuously improved/developed and extended through the implementation of the training by DGWRD, MPW.

2. Outputs and Activities of the Project

2-1. The outputs of the Project

- (1) The technical capability of IESC technical staff is to be enhanced;
- (2) The technical standard(s), guideline(s) and manual(s) including related computer system in the fields of investigation, planning, design, operation and maintenance, and rehabilitation and upgrading are to be developed and improved;
- (3) The training of capable irrigation technical staff in the fields mentioned in 2-1-(2) is to be implemented.

2-2. The activities of the Project

- (1) Development and improvement of technical standard(s), guideline(s) and manual(s)
 - 1) To review, modify and develop technical standard(s), guideline(s) and manual(s) in the following fields
 - a) Investigation, planning and design
 - b) Operation and maintenance
 - c) Rehabilitation and upgrading
 - 2) To introduce, modify or develop computer system to support the activities mentioned in 2-2-(1)-1)
- (2) Training
 - 1) Preparation of a training plan, curriculum, and materials
 - 2) Implementation of training for irrigation technical staff

3. Japanese Technical Cooperation

The Government of Japan will assist the Government of the Republic of Indonesia in carrying out the activities for obtaining the outputs described in paragraph 2.

4. Project Site

- (1) IESC in Bekasi as a main site
- (2) DGWRD, MPW in Jakarta as a sub site for supporting the Project's activities
- (3) Irrigation offices of the provincial government in South-Sulawesi and Lampung as model satellites to support supplementary activities such as data collection and case studies necessary for improving the standard(s), guideline(s) and manual(s) in the project sites described in 4- (1) and (2)

Note : Activities in the model satellites are implemented by the Indonesian side with technical guidance from Japanese experts.

ANNEX II. JAPANESE EXPERTS

1. Team Leader
2. Coordinator
3. Experts in the field of;
 - (1) Investigation, planning and design
 - (2) Operation and maintenance
 - (3) Rehabilitation and upgrading
 - (4) System development

Note : a) Coordinator and experts mentioned in 3 will cover the training activities.

b) Short-term experts will be dispatched when the need arises for the smooth implementation of the Project.

ANNEX III. MACHINERY AND EQUIPMENT

Taking account of the efficient use of equipment provided through grant aid and the project-type technical cooperation named the Construction Guidance Service Center Project, the following will be provided:

1. Equipment necessary for developing and improving standard(s), guideline(s) and manual(s);
2. Equipment necessary for training;
3. Other machinery and equipment necessary for the implementation of the Project.

ANNEX IV. INDONESIAN COUNTERPART PERSONNEL AND ADMINISTRATIVE
PERSONNEL

1. Project Director
2. Project Manager
3. Counterpart Personnel in the field of;
 - (1) Investigation, planning and design
 - (2) Operation and maintenance
 - (3) Rehabilitation and upgrading
 - (4) System development
4. Administrative Personnel
 - (1) Administration
 - (2) Accounting
5. Counterpart personnel in each short-term expert's field
6. Other necessary supporting staff

Note : At least two(2) full time counterpart personnel and one(1) administrative counterpart person shall be assigned in each field referred to in 3-(1), (2), (3) and (4).

ANNEX V. LAND, BUILDINGS AND FACILITIES

1. Land, buildings and facilities necessary for the implementation of the Project in DGWRD headquarters, IESC, and the model satellites
2. Office space for Japanese experts;
Office space in IESC and DGWRD headquarters
3. Training space in IESC
4. Other land, buildings and facilities necessary for the implementation of the Project

ANNEX VI. JOINT COORDINATING COMMITTEE

1. Function

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

- (1) To give direction and guidance to the activities carried out by the Project and to coordinate inter-related activities within DGWRD and other related agencies of MPW;
- (2) To review and approve the Annual Work Plan of the Project to be formulated under the framework of the Record of Discussions;
- (3) To review the overall progress of the technical cooperation program as well as the achievement of the Annual Work Plan;
- (4) To review and exchange views on major issues arising from or in connection with the technical cooperation program;
- (5) To select, examine and evaluate the technical standard(s), guideline(s) and manual(s) including computer system to be developed and improved by the Project.

2. Composition

(1) Chairperson

Director General of DGWRD, MPW

(2) Vice Chairperson

Assistant Director General of DGWRD, MPW

(3) Indonesian side

- 1) Director of the Directorate of Irrigation I, DGWRD, MPW
- 2) Director of the Directorate of Irrigation II, DGWRD, MPW
- 3) Director of the Directorate of Rivers, DGWRD, MPW
- 4) Director of the Directorate of Swamps, DGWRD, MPW
- 5) Director of the Directorate of Planning and Programming, DGWRD, MPW
- 6) Representative of the Research Institute of Water Resource Development, MPW

- 7) Representative of the Center for Data Processing and Mapping (PUSDATA), MPW
- 8) Representative of the National Development Planning Agency (BAPPENAS)
- 9) Representative of the Ministry of Finance

(4) Japanese side

- 1) Team Leader
- 2) Other Japanese experts including personnel dispatched by JICA
- 3) Representative of the JICA Indonesia Office.

Note : Official(s) of the Embassy of Japan may attend the Joint Coordinating Committee as observer(s).

(2) ミニッツ (協力実施に関する覚書き)

THE MINUTES OF UNDERSTANDING
ON THE JAPANESE TECHNICAL COOPERATION
FOR THE IRRIGATION ENGINEERING SERVICES CENTER PROJECT

The Japanese Implementation Survey Team (hereinafter referred to as "the Team") and the authorities concerned of the Republic of Indonesia had a series of discussions on the implementation of the Irrigation Engineering Service Center Project (hereinafter referred to as "the Project"). After the discussions, the Leader of the Team and the Director General of Water Resources Development, Ministry of Public Works, agreed to the following matters in order to implement the Project effectively and efficiently.

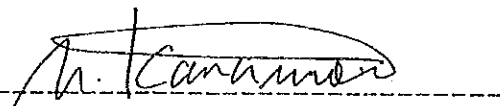
1. Tentative Schedule of Implementation

The Tentative Schedule of Implementation on the Project has been formulated as attached hereto (Appendix I) on conditions that necessary budget will be allocated for the implementation of the Project by both Governments, and that the schedule is subject to change within the framework of the Record of Discussions (hereinafter referred to as "the R/D") when necessity arises in the course of the implementation of the Project.

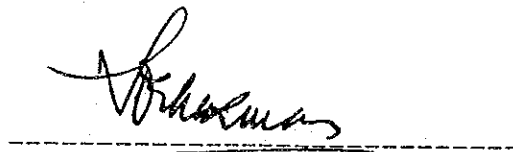
2. Others

The other issues necessary for the implementation of the Project have been agreed to as attached hereto (Appendix II).

Jakarta, March 8, 1994



Mr. Nobuo KANAMORI
Leader,
Implementation Survey Team,
Japan International Cooperation
Agency, Japan



Mr. Soeparmono
Director General of
Water Resources Development,
Ministry of Public Works,
Republic of Indonesia

APPENDIX I TENTATIVE SCHEDULE OF IMPLEMENTATION OF THE PROJECT

1. Activities of the Project

Item	Year	1994 June	1995	1996	1997	1998	1999 June	Remarks
1. Development and improvement of technical standard(s), guideline(s) and manual(s)								Refer to ANNEX I. of the R/D Including water management aspect
(1) Improvement of technical standard(s) for investigation, planning and design								
(2) Improvement of guideline(s) and/or manual(s) for operation and maintenance								
(3) Development of guideline(s) and/or manual(s) for rehabilitation and upgrading								
(4) Improvement of system development for investigation, planning, design, operation and maintenance, and rehabilitation and upgrading								
a) Improvement of technical calculation system								
b) Improvement of data base system								
2. Training								
(1) Preparation of training plan, curriculum and materials								
(2) Implementation of training								

2. Technical Cooperation Program (Japanese side)

Item	Year	1994	1995	1996	1997	1998	1999	Remarks
		June					June	
1. Long-term experts								Refer to ANNEX II. of the R/D
(1) Team Leader								
(2) Coordinator								
(3) Investigation, planning and design								
(4) Operation and maintenance								
(5) Rehabilitation and upgrading								
(6) System development								
2. Short-term expert(s)								If necessity arises
3. Equipment and machinery								Refer to ANNEX III. of the R/D
(1) Equipment necessary for developing and improving standard(s), guideline(s) and manual(s)								
(2) Equipment necessary for training								
(3) Other machinery and equipment necessary for the implementation of the Project								
4. Training of Indonesian counterpart personnel in Japan								Some personnel per year
5. Dispatch of survey team								If necessity arises

3. Technical Cooperation Program (Indonesian side)

Item	Year	1994	1995	1996	1997	1998	1999	Remarks
		June					June	
1. Assignment of counterpart and administrative personnel								Refer to ANNEX IV. of the R/D At least two(2) full time counterpart personnel and one(1) administrative counterpart person mentioned in (3) - a), b), c) and d)
(1) Project Director								
(2) Project Manager								
(3) Counterpart personnel in the field of:								
a) Investigation, planning and design								
b) Operation and maintenance								
c) Rehabilitation and upgrading								
d) System development								
(4) Administrative personnel								
a) Administration								
b) Accounting								
(5) Counterpart personnel in each short-term expert's field								
(6) Other necessary supporting staff								
2. Allocation of running cost of the Project								
3. Provision of land, buildings and facilities								Refer to ANNEX V. of the R/D

APPENDIX II OTHER ISSUES NECESSARY FOR THE IMPLEMENTATION OF THE PROJECT

1. REORGANIZATION OF DIRECTORATE GENERAL OF WATER RESOURCES DEVELOPMENT

- 1) Soon after the announcement of the reorganization of Directorate General of Water Resources Development (hereinafter referred to as "DGWRD"), the Indonesian side shall inform it to the Government of Japan through JICA Indonesia Office.
- 2) In line with the Decree of the Reorganization of DGWRD, the relevant parts of the R/D and these Minutes shall be rectified.
- 3) Indonesian personnel assigned for the Project shall be equivalent to the same position mentioned as the R/D and these Minutes, whenever DGWRD is reorganized.

2. COUNTERPART PERSONNEL

The Indonesian counterpart personnel assigned for the Japanese experts are as follows:

1) Team Leader

- a) Director, Directorate of Irrigation I (hereinafter referred to as "DOI-I") (administrative)
- b) Project Manager of Irrigation Engineering Service Center (hereinafter referred to as "IESC") (full time)

2) Coordinator

- a) Assistant Director, DOI-I, DGWRD (administrative)
- b) Chief of Sub-Division of General Affairs, DOI-II (full time)
- c) Chief of section of Administration (General Affairs), IESC (full time)

3) Investigation, planning and design

- a) Chief of Sub-Directorate of Planning and Design, DOI-I (administrative)
- b) Senior staff of Sub-Directorate of Planning and Design, DOI-II (full time)
- c) Staff, IESC (full time)

4) Operation and maintenance

- a) Chief of Sub-Directorate of Operation and Maintenance, DOI-I (administrative)
- b) Senior staff of Sub-Directorate of Operation and Maintenance, DOI-II (full time)

c) Staff, IESC (full time)

5) Rehabilitation and upgrading

- a) Chief of Sub-Directorate of Construction Guidance, DOI-I (administrative)
- b) Senior staff of Sub-Directorate of Construction Guidance, DOI-II (full time)
- c) Staff, IESC (full time)

6) System development

- a) Head of Information and Technical Administration Division, Secretariat of DGWRD (administrative)
- b) Senior staff of Information and Technical Administration Division, Secretariat of DGWRD : data base system (part time)
- c) Senior staff of DOI-I, DGWRD : technical calculation system (part time)
- d) Staff, IESC (full time)

3. ADMINISTRATION OF THE PROJECT

The administration of the Project attached Table 1. is as follows:

1) Joint Coordinating Committee

This is the supreme committee chaired by the Director General of DGWRD and its function is described in the R/D.

2) Regular Meeting

a) Function

Coordination of the activities among the Working Groups

b) Composition

Chairperson : Director of DOI-I

Member : Chairperson of each Working Group (Chief of Sub-Directorate or Head of Division) and Japanese experts

3) Working Group

a) Function

Examination and discussions on the standard(s), guideline(s) and manual(s) including computer system

b) Composition

Chairperson : Chief of Sub-Directorate or Head of Division

Member : Chief of section of Sub-Directorate or Division and Japanese experts

4) Task Force

a) Function

Improvement and development of draft document of standard(s), guideline(s) and manual(s)

- Improvement activities of system development
- b) Composition
- Chief person : Chief of section of IESC
 - Member : Full time counterpart personnel of IESC, specialist concerned in DGWRD as required and Japanese expert as advisor

4. REORGANIZATION OF IESC

- 1) IESC shall be established formally on the basis of the Ministerial Decree within the year 1994.
- 2) The organization of IESC as shown in Table 2. shall correspond to the activities of the Project in the aspect of organizational work demarcation and personnel.

5. WORKING ENVIRONMENT

- 1) Office space in IESC
 - a) Office space for all long-term experts
 - b) Meeting room for six experts
 - c) Office space for short-term experts (at least for two personnel)
- 2) Office space in DGWRD headquarters
 - a) Office space for three(3) long-term experts (fields of investigation, planning and design, operation and maintenance, and rehabilitation and upgrading)
 - b) Meeting room
- 3) Secretaries
At least three(3) secretaries for long-term experts
- 4) Furniture
 - a) One set of desk, chair and locker for each long-term expert
 - b) Two sets of desk, chair and locker for short-term experts
 - c) One set of sofas for Team Leader's room in IESC and for three(3) long-term experts' office space in DGWRD headquarters (two sets in total)
- 5) Telephones
Telephones for long-term experts in IESC and DGWRD headquarters

6. SCOPE OF EXPERTS' ACTIVITIES

Japanese experts will introduce necessary technologies in each field and give necessary advice for the Project activities to Indonesian counterpart personnel in order to implement the Project activities by Indonesian side.

7. MODEL SATELLITES

- 1) Indonesian side shall implement the activities in the model satellites with partial technical guidance from Japanese experts.
- 2) The main activities in model satellites are considered to apply produced standard(s), guideline(s) and manual(s) for dissemination through on the job training
- 3) The case study to be implemented in model satellites will be restricted to the one that the Indonesian side intends to do with eagerness.

Table 1. ADMINISTRATION OF THE PROJECT

Groups for implementation of the Project	Activities (Functions) and Composition
<p>1. Joint Coordinating Committee</p> <p>1-1. This will meet at least once a year and whenever the need arises</p> <p>1-2. One(1) committee will be established based on Annex VI of the R/D</p>	<p>(1) Activities (Functions)</p> <ol style="list-style-type: none"> 1) To give direction and guidance to the Project activities, and to coordinate the Project activities with authorities concerned 2) To review and approve the Annual Work Plan 3) To review the overall progress of the technical cooperation program 4) To review and exchange views on major issues on the Project 5) To select, examine and evaluate the technical standard(s), guideline(s) and manual(s) including computer system <p>(2) Composition</p> <p>Chairperson : Director General of DGWRD</p> <p>Vice chairperson : Assistant Director General of DGWRD</p> <p>Indonesian side :</p> <ul style="list-style-type: none"> - Director, DOI-I, DGWRD - Director, DOI-II, DGWRD - Director, DOR, DGWRD - Director, DOS, DGWRD - Director, DPP, DGWRD - Representative, RIWRD - Representative, CDPM - Representative, NDPA - Representative, Ministry of Finance <p>Japanese side</p> <ul style="list-style-type: none"> - Team Leader - Other Japanese experts including personnel dispatched by JICA - Representative of the JICA Indonesian Office - Official(s) of the Embassy of Japan as observer(s)
<p>2. Regular Meeting</p> <p>2-1. This will meet at least once per half year and</p>	<p>(1) Activities (Functions)</p> <ol style="list-style-type: none"> 1) To coordinate the activities among the Working Groups

<p>whenever the need arises</p> <p>2-2. One (1) committee will be established based on the Director General's Decree</p>	<p>2) To examine and review of the progress of the each Working Group activities</p> <p>3) To solve the major issues arising from the activities of the Working Groups</p> <p>(2) Composition Chairperson : Director, DOI-I, DGWRD</p> <p>Indonesian side :</p> <ul style="list-style-type: none"> - Project Manager of IESC - Chief of Sub-Directorate of Planning and Design DOI-I, DGWRD - Chief of Sub-Directorate of Operation and Maintenance, DOI-I, DGWRD - Chief of Sub-Directorate of Construction Guidance, DOI-I, DGWRD - Head of Training Division, DGWRD - Head of Information and Technical Administration Division, Secretariat, DGWRD <p>Japanese side</p> <ul style="list-style-type: none"> - All Japanese experts
<p>3. Working Group</p> <p>3-1. These will meet at least once per three (3) months and when the need arises</p> <p>3-2. Five (5) working groups as follows will be established based on the Director General's Decree</p> <p>1) Investigation, planning and design</p>	<p>(1) Activities (Functions)</p> <p>1) To give direction (i.e. selection of the work items under each field)</p> <p>2) To make the Annual Work Plan of each field</p> <p>3) To make the Annual Work Plan of each Task Force under the Working Groups</p> <p>(2) Composition</p> <p>Chairperson :</p> <ul style="list-style-type: none"> - Chief of Sub-Directorate of Planning and Design, DOI-I, DGWRD (Member of the Regular Meeting) <p>Indonesian side :</p> <ul style="list-style-type: none"> - Chief of section of Sub-Directorate of Planning and Design DOI-I, DOI-II, DOR, and DOS - Chief of section and staff of IESC

2) Operation and maintenance

Japanese side

- Expert in charge of investigation, planning and design

Chairperson :

- Chief of Sub-Directorate of Operation and Maintenance, DOI-I, DGWRD
(Member of the Regular Meeting)

Indonesian side :

- Chief of section of Sub-Directorate of Operation and Maintenance, DOI-I, DOI-II, DOR and DOS
- Chief of section and staff of IESC

Japanese side

- Expert in charge of operation and maintenance

3) Rehabilitation and upgrading

Chairperson :

- Chief of Sub-Directorate of Construction Guidance, DOI-I, DGWRD
(Member of the Regular Meeting)

Indonesian side

- Chief of section of Sub-Directorate of Construction Guidance, DOI-I, DOI-II, DOR and DOS
- Chief of section and staff of IESC

Japanese side

- Expert in charge of rehabilitation and upgrading

4) System development

Chairperson :

- Head of Information and Technical Administration Division, Secretariat of DGWRD
(Member of the Regular Meeting)

Indonesian side

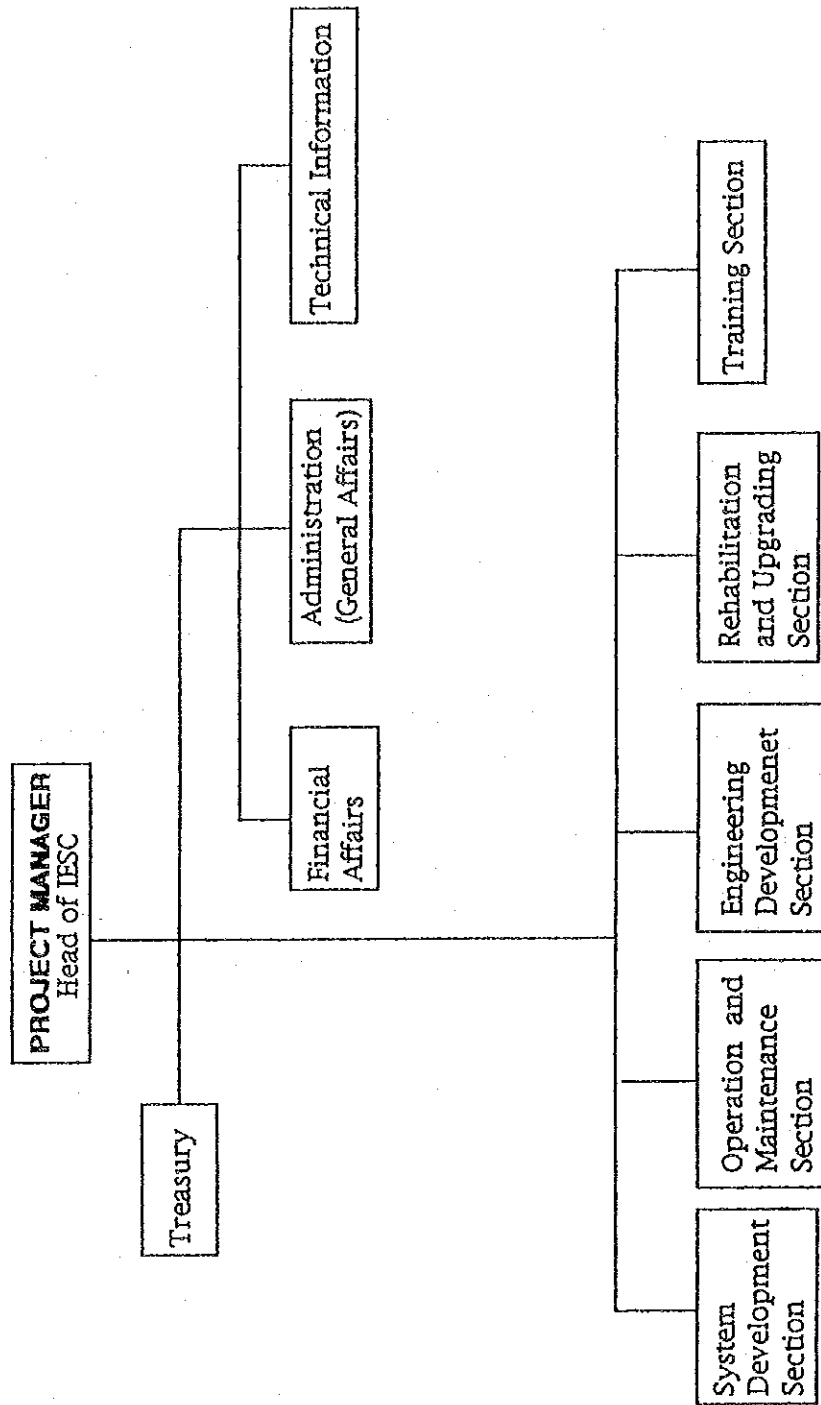
- Chief of section of Information and Technical Administration Division, Secretariat of DGWRD
- Chief of section of Technical Administration, DOI-I, DOI-II, DOR and DOS
- Chief of section and staff of IESC

<p>5) Training</p>	<p>Japanese side - Expert in charge of system development</p> <p>Chairperson : - Head of Training Division, DGWRD (Member of the Regular Meeting)</p> <p>Indonesian side - Chief of section of Training Division, DGWRD - Chief of Unit of Water Management Training, Training Division, DGWRD - Chief of section and staff of IESC</p> <p>Japanese side - Experts (Coordinator and experts concerned)</p>
<p>4. Task Force</p> <p>4-1. Daily work will be continuously carried out in each Task Force under the Working Groups</p> <p>4-2. Task forces will be established on the necessity of working activities by Director General's Decree</p>	<p>(1) Activities (Functions) 1) To implement actual working required for producing draft documents (i.e. field survey, data collection, preparation of draft document)</p> <p>(2) Composition Chief person : - Chief of section of IESC</p> <p>Indonesian side - Full time and part time counterpart personnel of DGWRD and IESC - Specialist concerned in DGWRD as required</p> <p>Japanese side - Expert as advisor</p>

Note:

MPW : Ministry of Public Works
 DGWRD : Directorate General of Water Resources Development, MPW
 DOI-I : Directorate of Irrigation I, DGWRD, MPW
 DOI-II : Directorate of Irrigation II, DGWRD, MPW
 DOR : Directorate of River, DGWRD, MPW
 DOS : Directorate of Swamp, DGWRD, MPW
 DPP : Directorate of Planning and Programming, DGWRD, MPW
 RIWRD : Research Institute of Water Resource Development
 CDPM : Center for Data Processing and Mapping (PUSDATA)
 NDPA : National Development Planning Agency (BAPPENAS)

Table 2. ORGANIZATION CHART OF IRRIGATION ENGINEERING SERVICE CENTER (IESC)



(3) 現地入手資料

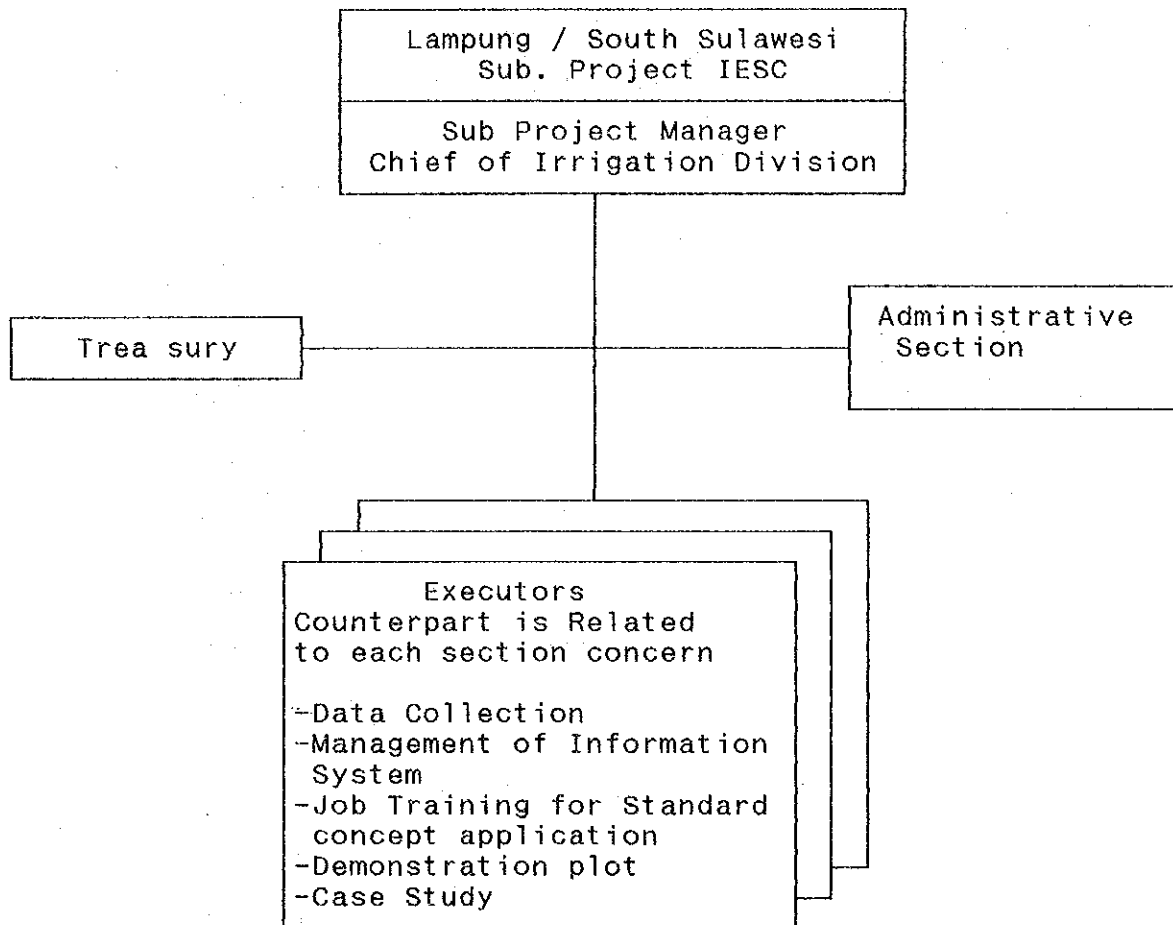
① I E S C の組織構成 (スタッフと機能)

I E S C S T A F F & F U N C T I O N

I T E M	N O . O F S T A F F	F U N C T I O N	C O M P O S I T I O N :
1. Project Manager	1	- General Management.	
2. Assistant of General Affairs.	28	- General Affairs Matters.	1 Assistant. 3 O&M of Office/Building/Services. 1 Inventarisation of Equipment & Facilities. 9 Official Activities. 5 Official Car Driver. 9 Security.
3. Assistant of Finance.	7	- Finance Matters.	1 Assistant. 1 Treasury. 2 Book keeper. 2 Budget Recorder/Report. 1 Typist.
4. Assistant of Technical Information.	5	- Evaluation & Reporting.	1 Chief. 1 Report Drafter. 1 Evaluation. 1 Typist. 1 Documentations.
5. S I D Section.	6	- Documents Preparation.	2 Counterparts. 2 Typist/Documt. 1 Drawing. 1 Helper/Copying.
6. O & M Section.	6	- Documents Preparation.	2 Counterparts. 2 Typist/Documt. 1 Drawing. 1 Helper/Copying.
7. R / U Section.	6	- Documents Preparation.	2 Counterparts. 2 Typist/Documt. 1 Drawing. 1 Helper/Copying.
8. Sistem Development Section.	9	- Development of program & Data preparation.	2 Counterparts. 2 Programmer. 2 Operator. 3 Typist/Helper/Copying.
9. Training Section.	7	- Training Arangement and Implementation.	2 Counterparts. 1 Program/Sillabus. 2 Accomodations. 2 Typist/Copying/Helper.
10 Secretaries.	3	- Secretariat Matters of Experts.	1 Jakarta Head Quaters Office. 2 Bekasi Office.
Total Staff	78		

② モデルサテライ実施体制（スタッフと機能等）

" MODEL SATELLITE "



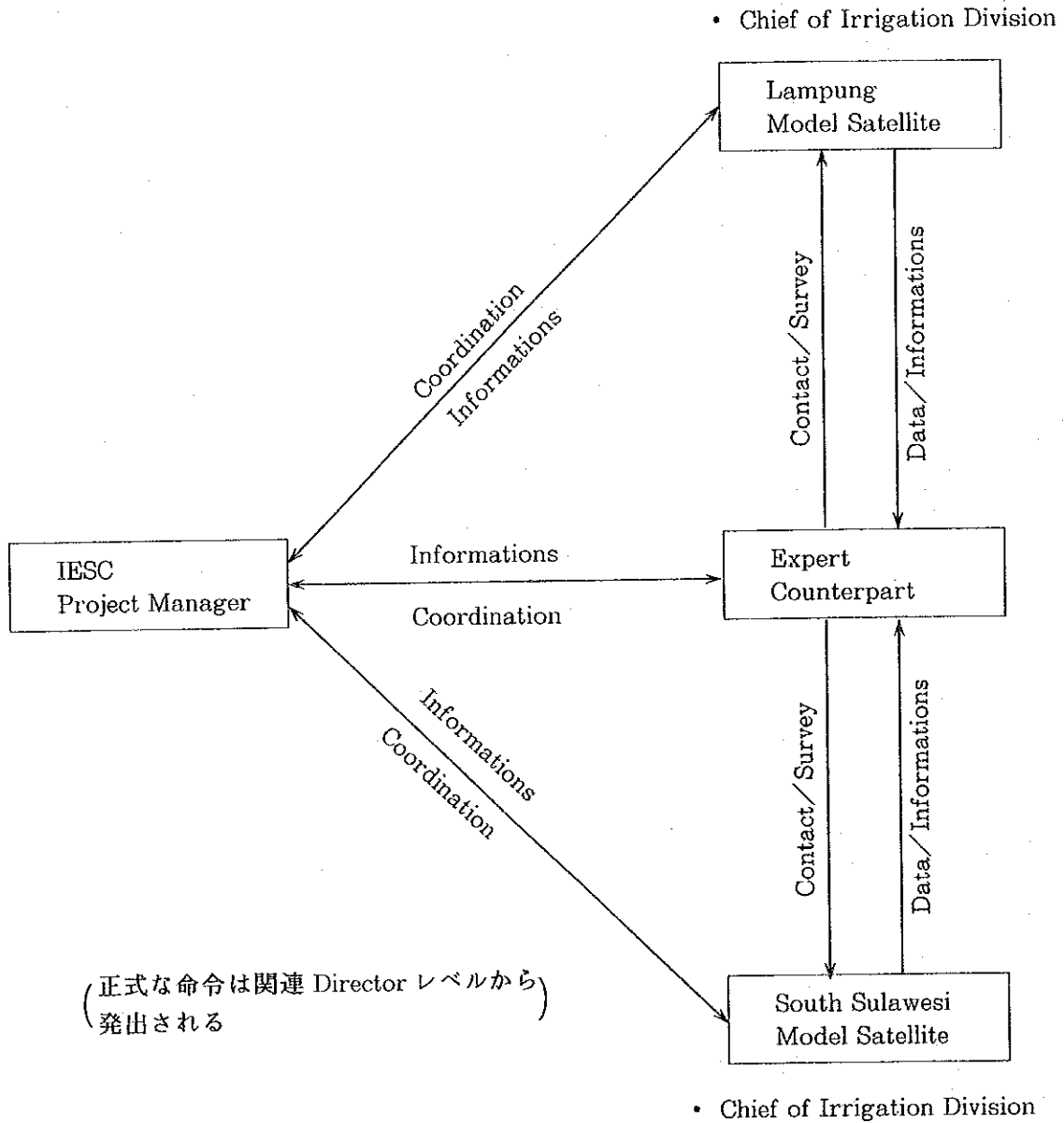
MODEL SATELLITE STAFF & FUNCTION

I T E M	NO.OF STAFF	FUNCTION	COMPOSITION:
1. Sub Project Manager.	1	-Coordinator of IESC activities in Model Satellite	-Handle by chief of Irrigation Division.
2. Treasury.	2	-Finance Arrangement and management.	- 1 Treasury. 1 Booking & Reporting.
3. Administration Section.	4	-Official matters and Documentation.	- 1 Chief. 3 Administrative & official matters.
4. Executor. (Related to each activities Concern)	2 (10)	-Preparation of data and information needed for standard concerned in Bekasi. -Preparation of Job Training, Facilities & Others.	- 1 Counterpart of IESC Head Quater. - 1 Expert of IESC Head Quater. - 2 Experience Staff of section concern. (*)
Total Staff	17		

(*)

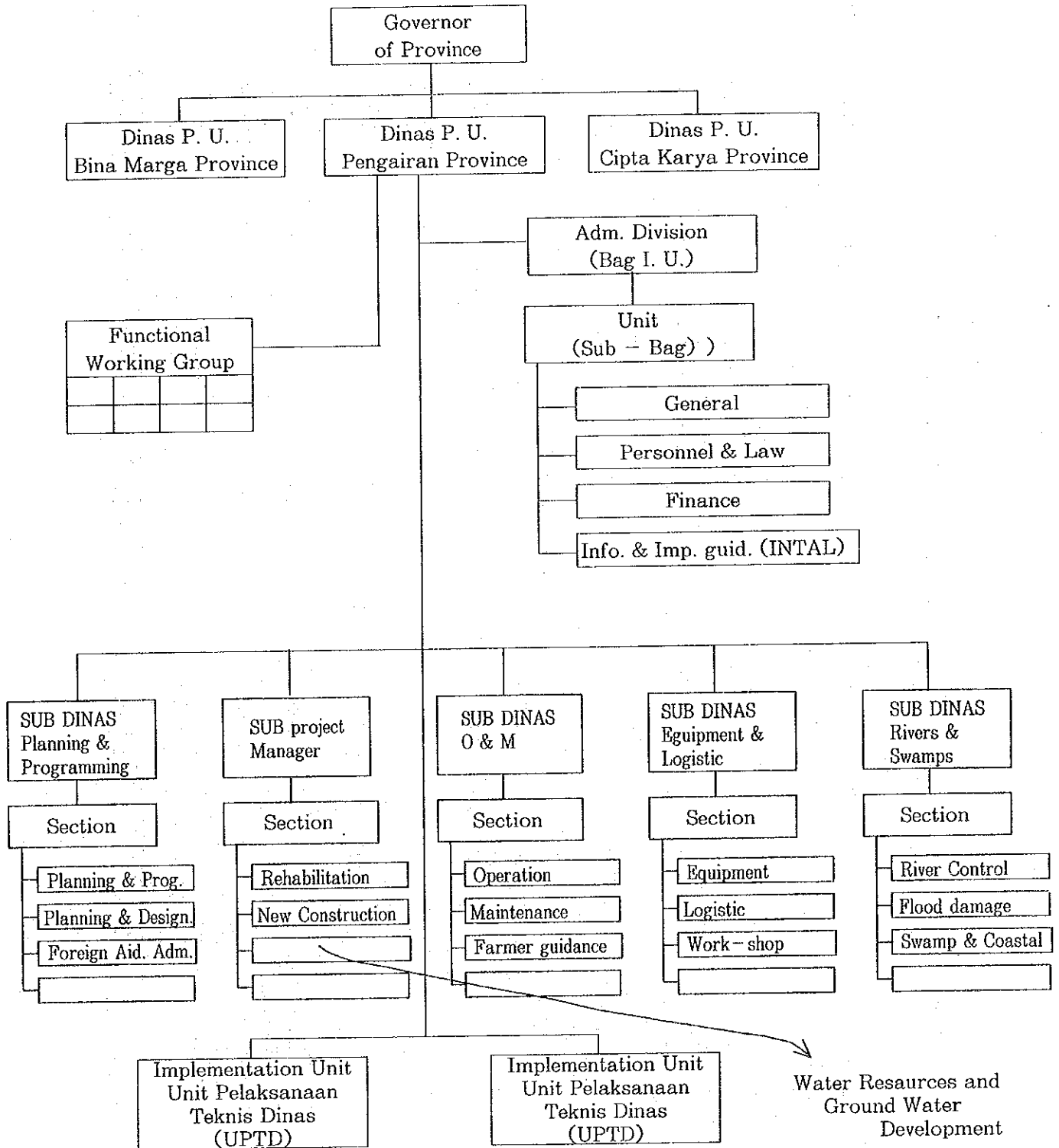
- 1) Rehabilitation Division
- 2) WR (Water Resources)
&
GW (Ground Water)
Development

IESC & MODEL SATELLITE
ORGANISATION ORDER SYSTEM



③ 州政府組織圖 (公共事業關係を主体)

ORGANIZATION CHART OF
THE PROVINCIAL IRRIGATION SERVICES (PRIS)



Mad. 8. 1994.

TENTATIVE SCHEDULE OF EQUIPMENT (ALTERNATIVE)

④ 機材導入計画 (インドネシア側要望)
a) 統括表

NO.	ACTIVITY / ITEM	'94/95 x Rp. 1000	'95/96 x Rp. 1000	'96/97 x Rp. 1000	'97/98 x Rp. 1000	'98/99 x Rp. 1000	TOTAL x Rp. 1000	REMARK
I.	SID							
1.	Internal Equipment	61,650	-	-	50,000	-	111,650	
2.	Water Quality Test Eq.	-	30,000	-	50,000	-	80,000	
3.	Survey Equipment	-	-	275,000	200,000	107,000	582,000	
	Sub Total - I	61,650	30,000	275,000	300,000	107,000	773,650	
II.	O & M							
1.	Internal Equipment	20,500	34,650	-	17,700	6,000	78,850	
2.	Climatology Equipment	-	-	-	90,150	-	90,150	
	Sub Total - II	20,500	34,650	0	107,850	6,000	169,000	
III.	R / U							
1.	Internal Equipment	42,000	-	50,000	-	-	92,000	
2.	Soil Lab. Equipment	50,000	-	-	143,463	-	193,463	
3.	Concrete Lab. Equipment	-	-	75,000	53,111	25,000	153,111	
	Sub Total - III	92,000	0	125,000	196,574	25,000	438,574	
IV.	SYSTEM DEVELOPMENT							
1.	Center in Bekasi	40,000	615,000	145,000	-	-	800,000	
2.	Model Sattelite	20,000	-	-	-	-	20,000	
3.	Jakarta & Bandung	50,000	-	-	-	-	50,000	
	Sub Total - IV	110,000	615,000	145,000	0	0	870,000	
V.	TRAINING							
1.	Internal Equipment	45,000	127,000	200,000	114,500	3,000	489,500	
2.	Training Equipment	60,000	-	99,280	116,180	-	275,460	
	Sub Total - V	105,000	127,000	299,280	230,680	3,000	764,960	
VI.	MODEL SATTELITE							
1.	Lab. Equipment	40,000	-	50,000	25,000	-	115,000	
	Sub Total - VI	40,000	-	50,000	25,000	-	115,000	
	TOTAL	429,150	806,650	894,280	860,104	141,000	3,131,184	

March, 8th, 1994

b) 調査・計画・設計

Table SI 3 TENTATIVE SCHEDULE OF PROCUREMENT OF EQUIPMENT

1. Field of Technical Investigation, Planning and Design

Item	Year	1994/1995	1995/1996	1996/1997	1997/1998	1998/1999	1999/2000	Amount (Rp 1,000)	Explanation of Reason
1. Guideline for Investigation Works									
- Geology Investigation									
1) Soil Moisture Tester EL.514-050		-	4.194. 2 set	-	-	-	-	5,021	To support the activities according to sequence of priority (1st priority).
2) Oven Drying Sampler and Cup		-	1 set	-	-	-	-	5,325	ditto
3) Copper Ring Sampler		-	2 set	-	-	-	-	1,650	ditto
4) Camera		-	1 unit	-	-	-	-	1,200	ditto
- Water Requirement Investigation									
1) PH meter		-	-	1 piece	-	-	-	4,508	To support the activities according to sequence of priority (2nd priority).
2) Water Quality Checker EA.440-200		-	-	1 set	-	-	-	12,500	ditto
3) Conducto meter		-	-	1 units	-	-	-	10,466	ditto
4) Water Level Recorder EL.520-040		-	-	2 units	-	-	-	73,000	ditto
- Soil and Pedological Investigation									
1) Piezometer EL.514-380		-	-	-	2 set	-	-	3,791	To support the activities according to sequence of priority (3rd priority).
2) Portable Soil Thermometer EA.504-024		-	-	-	3 unit	-	-	500	ditto
3) Rollmeter (stainless steel)		-	-	-	2 set	-	-	825	ditto
4) Sampler Extender		-	-	-	2 set	-	-	4,125	ditto
- Land Consolidation Investigation									
1) Lycimeter		-	-	-	-	2 set	-	4,850	To support the activities according to sequence of priority (4th priority).
2) Hook Gauge & Staff EL.506-350		-	-	-	-	2 units	-	19,000	ditto
3) Portable Soil Thermometer EA.504-024		-	-	-	-	2 units	-	400	ditto
4) Measuring Tape		-	-	-	-	2 units	-	850	ditto

Continued

Item	Year										Amount (Rp 1,000)	Explanation of Reason	
	1994/1996	1995/1996	1996/1997	1997/1998	1998/1999	1999/2000	1999/2000	1999/2000	1999/2000	1999/2000			
- Topography Survey 1) Camera	-	-	-	-	-	-	-	-	-	-	-	2,400	To support the activities according to sequence of priority (4th priority).
- Artificial Rainfall by Chemical Substances 1) Dig Yane Anemometer EA.503-060	-	-	-	-	-	-	-	-	-	-	2 unit	15,000	To support the activities according to sequence of priority (5th priority).
2) Standard Rain Gauge EL.502-012	-	-	-	-	-	-	-	-	-	-	2 set	12,000	ditto
3) Ordinary Thermometer	-	-	-	-	-	-	-	-	-	-	2 unit	500	ditto
2. Guideline for the Project Planning													
- Irrigation System for Upland 1) Water Quality Checker EA.440.200	-	1 set	-	-	-	-	-	-	-	-	-	12,500	To support the activities according to sequence of priority (1st priority).
2) Spectro photo meter EL.525-140	-	2 units	-	-	-	-	-	-	-	-	-	43,725	ditto
3) Piezometer EL.514-380	-	3 set	-	-	-	-	-	-	-	-	-	12,000	ditto
4) Ordinary Thermometer EA.504-010	-	3 units	-	-	-	-	-	-	-	-	-	750	ditto
- Drainage System for Lowland Areas 1) Theodolite (Electronic digital) Sokkia DT 4	-	-	2 units	-	-	-	-	-	-	-	-	44,000	To support the activities according to sequence of priority (2nd priority).
2) Instrument Distance Meter Sokkia APS 13	-	-	1 units	-	-	-	-	-	-	-	-	24,000	ditto
- Irrigation System for Lowland 1) Sychester	-	-	-	2 set	-	-	-	-	-	-	-	4,950	To support the activities according to sequence of priority (3th priority).
2) Water Level Recorder	-	-	-	3 units	-	-	-	-	-	-	-	111,245	ditto
3) Water Quality Checker EA.440.200	-	-	-	1 set	-	-	-	-	-	-	-	12,500	ditto

Continued

Item	Year	1994/1996	1995/1996	1996/1997	1997/1998	1998/1999	1999/2000	Amount (Rp 1,000)	Explanation of Reason
- Guideline for O & M Environment (RXL & RPI) 1) Standard Rain Gauge EL.502-012 2) Dig. Vane Anemometer EA.503-060 3) Ordinary Thermometer EA.504-010	1994/1996	-	-	-	-	3 set	-	18,000	To support the activities according to sequence of priority (4th priority).
	1995/1996	-	-	-	-	3 units 3 units	-	22,500 750	ditto ditto
	1996/1997	-	-	-	-	1 set	-	6,325	To support the activities according to sequence of priority (4th priority).
3. Design Standard and Its Manuals									
- Reservoir / Dam 1) Planimeter 2) Portable Computer 40 MB & Printer 3) Drafting Machine EP 4	1994/1996	-	-	-	-	-	-	1,825	To support the activities according to sequence of priority (1st priority).
	1995/1996	-	2 units	-	-	-	-	10,000 6,000	ditto ditto
	1996/1997	-	-	1 unit	-	-	-	5,000	To support the activities according to sequence of priority (2nd priority).
- Headwork 1) Drafting Facilities 2) Portable Computer 40 MB & Printer	1994/1996	-	-	1 unit	-	-	-	10,000	ditto
	1995/1996	-	-	1 unit	-	-	-	3,795	To support the activities according to sequence of priority (3th priority).
- Pumping Station 1) Piezometer EL.514-380 2) Portable Computer 40 MB & Printer	1994/1996	-	-	-	2 set	-	-	10,000	ditto
	1995/1996	-	-	-	1 unit	-	-		

Continues

Item	Year	1994/1995	1995/1996	1996/1997	1997/1998	1998/1999	1999/2000	Amount (Rp 1,000)	Explanation of Reason
- Structure for Small Scale Irrigation.		-	-	-	-	-	-	52,000	To support the activities according to sequence of priority (3th priority).
1) Current meter		-	-	-	2 units	-	-	22,000	ditto
2) Theodolite (Electronic Digital) Sokkia DT4		-	-	-	1 units	-	-	10,000	ditto
3) Portable Computer 40 MB		-	-	-	1 units	-	-	6,200	ditto
4) Water Pass (auto level) Sokkia C40		-	-	-	2 units	-	-		
- Brackish Water for Aqua Culture		-	-	-	-	-	-	12,500	To support the activities according to sequence of priority (3th priority).
1) Water Quality Checker EA.440.200		-	-	-	1 sets	-	-	4,509	ditto
2) PH meter EL.525-057		-	-	-	1 piece	-	-		
- Pipe Line Channel		-	-	-	-	-	-	52,000	To support the activities according to sequence of priority (4th priority).
1) Current meter		-	-	-	-	2 units	-	39,177	ditto
2) Turbidity meter completer with accessories (AquaFilter) EL.521-013		-	-	-	-	1 set	-		
- Open Channel / Canal		-	-	-	-	-	1 units	26,000	To support the activities according to sequence of priority (5th priority).
1) Current meter		-	-	-	-	-	1 units	10,000	ditto
2) Portable Computer 40 MB		-	-	-	-	-	-		
- Others (Micro hydro power on the irrigation system)		-	-	-	-	-	-	25,000	To support the activities according to sequence of priority (5th priority).
1) Current meter		-	-	-	-	-	1 units		

Year	1994/1995	1995/1996	1996/1997	1997/1998	1998/1999	1999/2000	Grand Total (Rp. 1,000)
Amount (Rp. 1,000)	16,000	84,997	184,476	259,675	165,362	89,500	800,000

March. 8th, 1994.

APPENDIX

c) 維持・管理

TENTATIVE SCHEDULE OF EQUIPMENT
FOR O & M ACTIVITIES
1994/1995 up to 1998/1999

(In Thousand Rupiah)

NO.	DISCRIPTION	FISCAL YEAR	Q'TY	AMOUNT (x 000 Rp)	94/95	95/96	96/97	97/98	98/99	R E M A R K
1	2		3	4	5	6	7	8	9	10
I.	CLIMATOLOGY EQUIPMENT.									
1.1.	Anemometer		1	4.750		4.750				
1.2.	Automatic rain fall Recorder		1	10.800		10.800				
1.3.	Sunshine Recorder		1	7.700			5.000	7.700		
1.4.	Thermo Hydrograph		1	5.000						
1.5.	Sun Radiation		1	12.500			550	12.500		
1.6.	Thermometer (wetball-dryball)		1	550		550				
1.7.	Ordinary rainfall		1	550						
1.8.	Current meter		1	9.600				9.600		
1.9.	PH meter		1	8.700		8.700				
1.10	Survey Boat		1	30.000			30.000			
II.	INTERNAL EQUIPMENT.									
2.1.	Personal Computer + Printer - PC Computer IBM 8530-F31 - Printer 8512		2	24.000		12.000				
2.2.	Word Processor		2	11.000			5.500			
2.3.	Mobile Storage System Filling cabinet (Elite)		1	4.000			4.000			
2.4.	Filling Cupboard (steel) Daichi		2	2.000						
2.5.	Filling Cabinet (4 drawers)		3	2.250						
2.6.	Working Desk + Chair 1,4x0,8 m		5	2.000						
2.7.	Typing Desk 0,4 x 0,6 m		4	1.600						

1	2	3	4	5	6	7	8	9	10
2.8.	Book Selves 1,2 x 2,4 m	3	3.000	1.000	2.000				
2.9.	Over Head Projector	1	6.500	6.500					
2.10	Direct Prject DP - 10	2	550	550					
2.11	White Board	3	1.950	650	650				
	Stabilizator Izumi 500 VA								
III.	MAINTENANCE & REPEAR	LS	20.000	4.000	4.000	6.000	6.000		
General Total			169.000	20.500	59.450	47.250	35.800	6.000	
			Budget per-Year						

d) 修復・更新

APPENDIX

TENTATIVE SCHEDULE OF EQUIPMENT
FOR R / U ACTIVITIES
1994/1995 up to 1998/1999

(In Thousand Rupiah)

NO.	DISCRIPTION	FISCAL YEAR	Q'TY	AMOUNT (x 000 Rp)	94/95	95/96	96/97	97/98	98/99	R E M A R K
1	2		3	4	5	6	7	8	9	10
I.	INTERNAL EQUIPMENT.									
1.1.	Personal Computer + Printer - PC Computer IBM 8530-F31 - Printer 8512 - Visual 4208-022		2	24.000	12.000	12.000				
1.2.	Word Processor - XT - LQ		2	11.000		5.500				
1.3.	Mobile Storage System Filling cabinet (Elite)		1	4.000		4.000				
1.4.	Filling Cupboard (steel) Daichi		2	2.000	2.000					
1.5.	Filling Cabinet (4 drawers)		3	2.250	1.500		750			
1.6.	Working Desk + Chair 1,4x0,8 m		5	2.000	1.200		800			
1.7.	Typing Desk 0,4 x 0,6 m		4	1.000	1.000					
1.8.	Book Selves 1,2 x 2,4 m		3	3.000	1.000	2.000				
1.9.	White Board		2	300	150					
1.10	Stabilizator Izumi 500 VA		3	1.950	650	650				
1.11	Daihatsu Taft Jeep GTX		1	43.000	43.000					
II.	SOIL LABORATORY EQUIPMENT.									
2.1.	Large specimen triaxial com- pression SO - 530		1	30.250	30.250					
2.2.	Standard type triaxial SO-540		1	26.400	26.400					
2.3.	Direct shear apparatus standard SO - 520		1	6.173	6.173					

1	2	3	4	5	6	7	8	9	10
2.4.	Direct shear apparatus SO-520A	1	2.350	9.350					
2.5.	Unconfined compression SO-500	1	4.382	4.382					
2.6.	CBR Laboratory test SO-360	1	8.487	8.487					
2.7.	Consolidation apparatus SO-250A	1	4.949	4.949					
2.8.	Automatic Mechanical Compaction SO - 356	1	9.910	9.910					
2.9.	Constant head permeability SO - 550	1	2.200	2.200					
2.10	Falling head permeability SO - 575	1	963	963					
2.11	Plate bearing set SO - 250B	1	22.715	22.715					
2.12	Compaction set SO - 350	1	1.759	1.759					
2.13	Specific gravity SO - 340	1	731	731					
2.14	Liquid limit SO - 310	2	1.878	939					
2.15	Plastic limit SO - 315	2	388	194					
2.16	Shrinkage limit SO - 320	1	585	585					
2.17	Mechanical analysis stirrer SO 333 + 334	1	1.176	1.176					
2.18	Hidrometer SO - 332	10	3.670	367					
2.19	Grain sieve analysis SO - 330	2	15.330	7.665					
2.20	Rotap sieve shaker G -2206	1	11.226	11.226					
2.21	Cone penetrometer of Laboratory SO - 585	1	3.219	3.219					
2.22	Soil mixer GE - 953	1	17.875	17.875					
2.23	Wooden sieving machine SO -510	1	5.775	5.775					
2.24	Spatula GE -3820	20	300	14					
2.25	Straightedge GE - 890	20	240	12					
2.26	Desicator GE - 452	2	1.644	822					
2.27	Volumetric flash GE - 410	20	1.140	57					
2.28	Water distalation BI - 120	1	748	748					

1	2	3	4	5	6	7	8	9	10
III-	CONCRETE LABORATORY EQUIPMENT.								
3.1	Compression testing machine CO - 325.2	1	34.926	34.926					
3.2	Compression testing Hand CO - 321.2	1	22.023	22.023					
3.3	Los Angeles testing machine AG - 700	1	14.861	14.861					
3.4	Electric oven GE - 172	2	18.532	9.266					
3.5	Portable concrete mixer CO-610	1	5.920	5.920					
3.6	Plate form scale GE -158A	1	605	605					
3.7	Coarse agregat specific grafi- tytest AG-820	1	2.875	2.875					
3.8	Concrete pans GE - 303	2	462	231					
3.9	Cilinder mold (0 15 / 30 cm) CO - 301	20	5.500	275					
3.10	Cub mold (15 x 15 x 15 cm) CO - 312	20	4.100	205					
3.11	Washington type air meter EL34 -3260	1	8.876	8.876					
3.12	Slump test apparatus CO - 370	1	591	591					
3.13	Triangular straighteger GE - 893	2	78	39					
3.14	Specimen grip GE - 121	1	138	138					
3.15	Sample splitters GA - 955	1	612	612					
3.16	Agregate test sieve set AG - 121	1	3.074	3.074					
3.17	Sand absorption cone AG202A-250	1	178	178					
3.18	Ro-tap sieve shaker AG - 811	1	11.650	11.650					
3.19	Stoppered volumeter flask GE - 412	3	288	96					
3.20	Glas breaker GE-42213	10	330	33					
3.21	Dial balance GE - 153	1	0.929	1.929					
3.22	Safe card Daichi	2	3.300	1.650					
3.23	Steel head hammer GE - 901	1	25	25					

1	2	3	4	5	6	7	8	9	10
3.24	Rubber head hammer GE - 900	1	13	13					
3.25	Wooden head hammer GE - 903	1	17	17					
3.26	Concrete sovel GE - 815	3	189	63					
3.27	Wooden frame sieve AG - 400	1	4.518	4.518					
3.28	Wooden sieve machine AG - 510	1	5.775	5.775					
3.29	Hand scope round GE - 800	3	189	63					
3.30	Sample pans GE - 301	2	202	101					
3.31	Graduated cylinder GE - 405	3	417	139					
3.32	Evaporation dishes GE - 500	2	20	10					
3.33	Desikator GE - 452	1	822	822					
3.34	Crusible tong GE - 551	2	76	38					
General Total			437.585						
Budget per-Year									

1994. March. 8th

e) システム開発

THE FIELD OF SYSTEM DEVELOPMENT

NO.	DESCRIPTION & SPECIFICATION	'94/'95 x Rp.1000	'95/'96 x Rp.1000	'96/'97 x Rp.1000	'97/'98 x Rp.1000	'98/'99 x Rp.1000	TOTAL x Rp.1000	REMARK
I.	IESC CENTER (BEKASI)							
1.	Engineering WS.		111,000					
2.	Server		116,000					
3.	PC Computer 486	40,000						
4.	BASIC Software		15,000					
5.	Serial Printer 400 Cps		8,000					
6.	Line Printer			25,000				
7.	UPS 5 KVA		10,000					
8.	Digitizing System		30,000					
9.	GIS Software		100,000					
10.	WS ARC/INFO		50,000					
11.	Image Analysis System		100,000					
12.	LAN			100,000				
13.	Data Base Software		10,000					
14.	Optical Disk Unit		15,000					
15.	Magnetic Tape Drive			20,000				
16.	Page Printer		20,000					
17.	Scanner (A0)		30,000					
	SUB TOTAL-I	40,000	615,000	145,000			800,000	
II.	MODEL SATELLITE							
	PC Computer 486	20,000						2 UNITS
	SUB TOTAL-II	20,000					20,000	
III.	HEADQUARTERS (JAKARTA & BANDUNG)							
	PC Computer 486	50,000						5 UNITS
	SUB TOTAL-III	50,000					50,000	
	TOTAL	110,000	615,000	145,000	0	0	870,000	

Month 8th 1994.

f) 研 修

APPENDIX

TENTATIVE SCHEDULE OF EQUIPMENT
FOR TRAINING ACTIVITIES
1994/1995 up to 1998/1999

(In Thousand Rupiah)

NO.	DISCRIPTION	FISCAL YEAR	QTY	AMOUNT (x 000 Rp)	94/95	95/96	96/97	97/98	98/99	R E M A R K
1	2		3	4	5	6	7	8	9	10
I.	INTERNAL EQUIPMENT.									
1.1.	Field Vehicles		4	140.000	35.000	70.000				
1.2.	Micro Bus		2	240.000		240.000				
1.3.	Camera		1	2.500						
1.4.	Motor Cycle		4	14.000						
1.5.	PC + Printer		1	7.500						
1.6.	Color TV		1	2.500			2.500			
1.7.	Video Recorder		1	2.500			2.500			
1.8.	Wire Less		4	6.000	3.000				3.000	
1.9.	Photo Copy Machine		1	10.000	10.000					
1.10	Mobile Training Unit		1	65.000	65.000					
II.	TRAINING EQUIPMENT.									
2.1.	projector Film 16 mm		1	4.500		4.500				
2.2.	Slide Projector + Screen		2	5.000		5.000				
2.3.	Laser OHP + Screen		3	13.500		9.000			4.500	
2.4.	Printed White Board		3	45.000	15.000	22.000	15.000		15.000	
2.5.	Theodolit Wild T0		4	88.000	22.000	22.000	44.000		44.000	
2.6.	Theodolit Wild T2		3	70.520	23.000	23.000	47.520		47.520	
2.7.	Water Pass Wild Nak 2		4	14.320		7.160	7.160		7.160	
2.8.	Electronic Distance Measure- ment (E.D.M)		1	50.000		50.000				
2.9.	Rolli Meter		4	1.620		1.620				
2.10	Sound Slide		1	2.500				2.500		
General Total				784.460	105.760	226.280	310.000	120.680	37.500	
Budget per-Year										

⑤ 詳細活動項目（インドネシア側要望）

TENTATIVE IMPLEMENTATION ACTIVITIES PROPOSED BY INDONESIAN SIDE

1. Field of Improvement of Technical Standard(s) for Investigation, Planning and Design

Item	Year	1994	1995	1996	1997	1998	1999	Remarks	#
		June					June		
1. Proposed activities from Indonesia									
(1) Guidelines for investigation works									
1) Geology investigation (Geological data)									1
2) Water requirement investigation (Water requirement for paddy and other crops)									2
3) Soil and pedological investigation (Soil suitability data)									3
4) Land consolidation investigation (Land capability and land consolidation for agricultural needs)									4
5) Topo survey (Aerial photographic)									5
6) Others (Artificial rainfall by chemical substance, tidal river survey)									6
(2) Guidelines for the project planning									
1) Irrigation system for paddy (Efficient and effective irrigation canal)									1
2) Drainage system for lowland area (Drainage canal for the lowland area)									2
3) Irrigation system for upland (Pumping and micro-irrigation for upland)									3
4) Computerization for inventory program in swamp irrigation infra-structure (Criteria and manual of operation and maintenance)									4
5) Standard for operation and maintenance environment (RKL, & RPL)									4

(Criteria and manual of operation and maintenance)									
6) Small irrigation									6
7) Fish pond irrigation									6
(3) Design standards and manuals									
1) Reservoir/Dam									1
(Small dam and large dam: earth dam, rock-fill dam, concrete dam, and coastal reservoir)									
2) Headworks									2
(Diversion structure, free intake and scouring sluice, sediment trap, appurtenant works barrage, tyroll, rubber dam, tidal gate)									
3) Pumping station									3
(Manual of pipe line channel)									
4) Pipeline channel									
(manual of pipeline channel)									
5) Open channel/canal									5
(Lined canal, tunnel, steady and non steady (tidal) flow)									
6) Structure for small scale irrigation									6
(Small scale irrigation)									
7) Brackish water for aqua-culture									7
(Manual of brackish water)									
8) Others									8
(Micro-hydropower on irrigation system)									
2. Proposed equipment and machinery necessary for the implementation of the activities									

Note: * : Sequence of priority

2. Field of Improvement of Guideline(s) and/or Manual(s) for Operation and Maintenance
Guideline/technology

Item	Year	1994	1995	1996	1997	1998	1999	Remarks	#
		June					June		
1. Proposed activities from Indonesia									
(1) Guideline for operation and maintenance (O&M) for headworks/weir/diversion structure/measuring devices									1
(2) Guideline for pumping station									2
(3) Guideline for canals and facilities									2
(4) Guideline for O&M for irrigation Scheme									2
(5) Guideline for improvement of water management facilities									3
(6) Guideline/manual for water management									3
(7) Guideline for water pollution for water management									3
(8) Guideline/manual for maintenance equipment in swamp irrigation									4
(9) Guideline/manual for analysis of river fee estimation									4
(10) Guideline for damage/manual for solve for river									4
(11) Guideline/manual for safety dam evaluation method									4
(12) Guideline/manual for specification of river maintenance									4
(13) Guideline/manual for analysis of maintenance cost of river									4

(14) Guideline/manual for standard O&M organization								5
(15) Guideline/manual of O&M for aqua culture								5
(16) Guideline/manual of O&M for tree crops								5
(17) Guideline/manual for guidance support for river maintenance								5
(18) Guideline/manual for inventory of river and its facilities								5
(19) Guideline/manual for pollution measurement method of river								5
(20) Guideline/manual for plan of river capacity								5
(21) Guideline/manual for code of land use of river area								5
(22) Guideline/manual for guidance flood control operation								5
(23) Manual for transportation regulation use of river								6
(24) Guideline for the improvement of water management facilities								6
(25) Guideline/manual for evaluation method of river structure condition								7
2. Proposed equipment and machinery necessary for the implementation of the activities								

Note: * : Sequence of priority

3. Field of Development of Guideline(s) and/or Manual(s) for Rehabilitation and Upgrading

Item	Year							Remarks	#
	1994 June	1995	1996	1997	1998	1999 June			
1. Proposed activities from Indonesia									
(1) Guideline/manual for channel/ canal							-Method for monitoring of facilities and assessment -Technology for efficient and cost effective rehabilitation -Guideline for rehabilitation and upgrading	1	
(2) Guideline/manual for embankment							- ditto -	1	
(3) Guideline/manual for headworks							- ditto -	2	
(4) Guideline/manual for reservoir							- ditto -	2	
(5) Guideline/manual for flood control structure							- ditto -	2	
(6) Guideline/manual for krib/groyin /gabin							- ditto -	3	
(7) Guideline/manual for retaining wall							- ditto -	3	
(8) Guideline/manual for gate							- ditto -	4	
(9) Guideline/manual for pumping station							- ditto -	5	
(10) Guideline/manual for other structure							- ditto -	6	

2. Proposed equipment and machinery necessary for the implementation of the activities planning and design											
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Note: ‡ : Sequence of priority

4. Field of Improvement of System Development for Investigation, Planning, Design, Operation and Maintenance, and Rehabilitation and Upgrading

Item	Year	1994 June	1995	1996	1997	1998	1999 June	Remarks	#
1. Proposed activities from Indonesia								Refer to attached table of System Development List	
(1) Improvement of technical calculation system									
1) Investigation, planning and design									
2) Operation and maintenance									
3) Rehabilitation and upgrading									
(2) Improvement of data base system									
1) Investigation, planning and design									
2) Operation and maintenance									
3) Rehabilitation and upgrading									
2. Proposed equipment and machinery necessary for the implementation of the activities									

Note: # : Sequence of priority

5. Field of Training

Item	Year	1994	1995	1996	1997	1998	1999	Remarks	#
		June					June		
1. Proposed activities from Indonesia									
(1) Preparation of training plan, curriculum and materials									
(2) Implementation of training									
2. Proposed equipment and machinery necessary for the implementation of the activities									

Note: # : Sequence of priority

⑥ システム整理表 (インドネシア側要望)

MATRIX OF IESC PROGRAM

TYPE FIELD	LIST OF SYSTEM	USER			REMARK	
		HEADQUARTERS	IESC (BEKAS)	MODEL SAT.		
INVESTIGATION, PLANNING AND DESIGN	SOFT WARE	- Hydraulic analysis program	DOI, DOR, RIWRD	OK	OK	TECHNICAL CALC.
		- Structural design program	DOI, DOR, RIWRD	OK	OK	
		- GIS System	DOI, MIS, RIWRD	OK	OK	
		- Drainage analysis	DOI, DOS	-	OK	
		- Engineering economics	DPP	-	-	
	SOFT WARE	- Hydrological data	DPP, MIS, RIWRD	OK	OK	DATA BASE
		- Soil data	DOI, DOR, RIWRD	OK	OK	
		- Digital mapping	DOI, DOR, RIWRD	OK	OK	
		- Ground water data	DOI, RIWRD	OK	OK	
		- Geo technical data	DOI, RIWRD	OK	OK	
HARD WARE	- Meteorological data	DOI, DOR, RIWRD	OK	OK	*) 1 UNIT EACH	
	- Register of the project	DOI, MIS	-	-		
	- Training data	TD	OK	OK		
		PC COM- PUTER (5 UNITS)	SUN WORK STATION (2 UNITS) PC (6 UNITS)	PC 2 UNITS PLOTTER 2 UNITS *)		
OPERATION AND MAINTENANCE	SOFT WARE	- Water balance analysis	DOI	OK	OK	TECHNICAL CALC.
		- Water distribution system	DOI	OK	OK	
		- Water requirement efficiency	DOI	OK	OK	
	HARD WARE	- Register of Irrigation System	DOI, MIS	OK	OK	DATA BASE
		- Digital mapping	DOI, MIS	OK	OK	
		- Register of beneficiaries	DOI	OK	-	
REHABILITATION / UPGRADING	SOFT WARE	- Hydraulic analysis program	DOI, DOS	OK	OK	TECHNICAL CALC.
		- Structural design program	DOI	OK	OK	
		- Hydrological data	DOI, DOS	OK	OK	
		- Soil data	DOI, DOS	OK	OK	
		- Digital mapping	DOI	OK	OK	
		- Ground water data	DOI	OK	OK	
		- Geo technical data	DOI	OK	OK	
	- Meteorological data	DOI, DOS	OK	OK		
HARD WARE						

DOI : Directorate of Irrigation (I & II) RIWRD : Research Institute of WRD. TD : Training Division
DOR : Directorate of River MIS : Information and Technical Adm. Div.
DOS : Directorate of Swamp DPP : Directorate of Planning and Programming

ok: Necessary.

-: Not necessary

JICA

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