

## IV 今後の必要な措置

### 1. F/Sの実施方針

#### (1) 図化計画案

図化計画には次の3案が考えられる。

##### (A) 1/50,000航空写真より

- a. F/S地区について 1/10,000 作図
- b. Pre F/Sについて 1/50,000 利用(ない場合作図)
- c. F/S地区について 1/50,000 写真ない場合は1/100,000より作図(水源地の一部のみ)

##### (B) 全地区 1/5,000 用の航空写真撮影を行い

- a. F/S地区について 1/5,000 図化
- b. 他地区のPre F/Sは 1/10,000 項次図化かあるいは、
- c. D/D用に 1/5,000 図化

##### (C) a. 1/50,000 航空写真のあるところは、1/10,000 図化

- b. 1/50,000 航空写真のないところは航空写真撮影し 1/5,000 図化

#### (2) F/Sの実施計画案

F/Sは次の3案が考えられる。

##### (A) 19,500 ha 案

- a. ラナウ湖を水源とする水量(232億 $m^3$ )で乾季にかんがいできる面積。(全面積水稲とする。)
- b. かんがい効果の発生の大きい、ブリタン第1ステージおよびピサン地区。
- c. ダムを必要とせず、事業費、工期が適正規模

##### (B) 48,000 ha 案

- a. B.E.P.地区(全面積水稲とする)
- b. O.K.U.一行政区域に入り、FAO報告がベースとなり計画樹立が容易
- c. ダムを必要とすることおよび面積拡大で事業費および工期が大きい。

##### (C) 81,000 ha 案









- a. U.K.P.全域
- b. T.A.は州が異り計画樹立、事業実施上の調整が必要。将来の施設管理組織についても要検討
- c. イ・Aのデータが不足している。
- d. 地区が拡大で事業費、工期共大きく一事業一括施工は困難となろう。

e. ウンプ川流域に他のプロジェクトおよびその水源ダムも検討されており、若しダム計画に加わることができれば計画がB.E.P. から分離される恐れがある。

(3) 図化とF/Sの関係

図化とF/Sの関係は、前記の(1),(2)より次の相合せが考えられる。

第IV-1図

|              |  | F/S A 案  | B  | C   |
|--------------|--|--|--|---|
|              |  | 19,500 ha<br>B.E.P. 第1ステージ<br>+ピサン地区<br>ラノウ湖利用   | 48,000 ha<br>B.E.P. 全地区<br>ラノウ湖+ダム   | 81,000 ha<br>B.E.P. } U.K.P.<br>L.A } 全地区<br>ラノウ湖+ダム  |
| 図化<br>I<br>案 | 1/50,000 写真より<br>1/10,000 図化~<br>F/S 用<br>他は 1/50,000 ~<br>Pre F/S | O.K.    | N.G.    | N.G.           |
|              |  | • 完全 1/10,000 図化不<br>能   | • ダム水源地区図面<br>なし   | 全 左   |
|              | II   | 全部航空写真<br>1/5,000 図化<br>~F/S 用<br>他は 1/50,000<br>~ Pre F/S                               | O.K.    | O.K.         |
|              | • 適正規模<br>• D/D まで早い。  | • F/S 期間3年以上<br>• 事業費大   | • 変換過大<br>• 事業費過大<br>• 工期大   |   |
| III          | 1/50,000 写真より<br>1/10,000 図化~F/S<br>不足分航空写真と図化<br>1/5,000 ~F/S     | O.K.  | O.K.  | O.K. ≙ N.G.  |
|              | • S.A.P 脱落<br>• D/D で全射影必要<br>• 結果的にA-I 比同                         | 全 左  | 全上よりF/S が入り<br>易い  |   |

但し、図化I、II案は、イ国より航空Filmが借り出せることが条件となる。

(4) 現存の写真と地形図

① ポジ写真(バレンバン農業部)

a. 各フライトともコメリン川左岸を境としてフライトが不連続でかつ欠損がほとんどである。関係地区のフライト№30に5枚、№28に3枚、№27に7枚、№26に3枚の欠損がみられる。№30はピサン地区が欠損している。

b. クラウドエリア(Cloud Area)は各所にみられ、主として山岳部に多いが、B.E.P. 末路

にフライトNo 26の写真番号871, 873にクラウドエリアがある。

c. TA地区は完全にカバーされている。

d. 写真そのものの重複精度や、鮮明さは上記a, bを除けば充分良好である。

② 地形図(1/50,000)

1/50,000 図化範囲は 図 のとおりであり、ラナウ湖下流の 川集水区域が図化されていない。それ以外はUKP地域は完全に図化されている。また必要範囲の1/50,000 地形図は収集することができた。

③ フィルムについて

フィルムはジャカルタの陸軍部に保管されており、これの持ち出しは許可にならない。但しボシ写真は入手できる。(DPU調査)

④ 写真および地形図に対する総合判断

ボシ写真の欠損部やクラウドエリアは地上測量により補完できよう。ただしダムサイトおよび集水域については、地上測量により補うことは不可能で、航空撮影するか、現存の1/500,000より拡大するかが考えられる方法である。

1/500,000の利用については、集中区域の山岳部は比較的低く、コノリン川にオガン川が樹枝状に入り組み、いくつかの鞍部がみられ、貯水数でもいくつかの副ダムが必要と見受けられる。従ってダム計画には写真撮影は不可欠である。

また、航空写真撮影は1969年(FAO)及び1972年(陸軍)であり、その後の地方の変化は著しいものがあると予想される。1950年から1977年までのブリタンを含むOKU地方の入植人口は、101,790人で23,277戸となっている。水田は1971年から1977年に43%の増加を示している。なおTA地域の現地調査では図面はほとんど現道を示しておらず、数年前に通交したと言われる箇所がすでにジャングル化しているなどの例もある。

さらに、F/Sから数年を経ずしてD/D開始が予想され1/5,000 図化は不可欠と考えられることからみれば、F/Sに航空写真撮影を含めることは適切ということができよう。

② A-Ⅱ

実質的にはA-Ⅰと同じF/Sとなるが、実測図に基づいていること、およびU.K.P.の残余はPre F/Sに入ること、さらに航空写真撮影が終了していることから、順次精度の高いF/SあるいはD/Dに入ることができる。事業規模、2期、計画の実現性から、インドネシア側との討議の結果この案が先行的にF/Sに入ることによって合意がなされた。

③ B-Ⅱ

BEP 48,000 haのF/Sを実施するためのもので、このためには水源地域の図化とダム調査が必要不可欠となり調査規模はかなり大きくなる。それは48,000 haの乾季の水田かんがいを全面的に考慮した場合で、FAOレポートの作物栽培計画により、乾季の半量を他の畑作に切替えるならば水源はラナウ湖に依存できる。A-ⅡとすべきかB-Ⅱとすべきかは、ブリタン地区を水田単作とするか畑作輪換とするのか判断が鍵となる。現地調査の結果では、B.E.P.地域はすでに天水田化が進み明らかに水田志向であり、乾季畑作化の実例は見当たらない。また現地の行政機関、農民はこの地区での畑作に興味を示さない。なおジャカルタのDPU内にもブリタン地区は水田単作が最善との判断が多い。

④ B-Ⅲ

現地調査前の段階で検討された案であるがT.A.地域をPre F/Sにした点は異なる。水源地域については、施設位置のみ航測図化されることになり、B案が約28,500 ha分に相当する用水量をダムに7.29億トン依存することを考慮すると集水域、港水域の精度が確保されない欠点がある。

(7) F/S対象地区の設定

下記の理由によりF/S対象地区は、A-Ⅱの、FAO報告のB.E.P.第1ステージ16,000 haと隣接する第2ステージのピサソ地区3,500 haとする。

- ① ラナウ湖に貯溜できる水量で乾季全面積かんがいできること。
- ② 既に天水田が発達し、二毛作水稲作に直ちに移行できること。
- ③ さらに面積を拡大すると、ラナウ湖水源に不足を生じダムが必要となること。
- ④ ダム計画はB.E.P.、T.A.を含めて計画しなければならないため中間的な面積例えば、B.E.P. 48,000 haでは、不完全な計画となる。
- ⑤ FAO報告の作物栽培計画により、乾季50%以下の水稲作とするとラナウ湖水源で、BEP 48,000 haは水量は充足されるが、T.A.についてはコメリン川に単独でダムを造ることになり、ウンブ川にダムを造ることに比べ不利となる。T.A.地区はB.E.P.と合せて水源計画を樹てることに有利性がある筈である。
- ⑥ 事業量、費用、工期等が他の例から適正規模である。(次表のとおり)
- ⑦ 他の例からみて適正規模のF/S期間で、かつ1/5,000航空写真化を新規に実施でき、

(5) 航空写真撮影および図化の範囲と縮尺

| 案     | 地区 | 作業<br>縮尺       | 航空写真撮影   |          | 図化       |          |         |
|-------|----|----------------|----------|----------|----------|----------|---------|
|       |    |                | 1/50,000 | 1/20,000 | 1/50,000 | 1/10,000 | 1/5,000 |
| A-I   |    | B.E.P.(I)      |          |          |          | 300      |         |
|       |    | 計              |          |          |          | 300      |         |
| A-II  |    | 水源地            | 650      |          |          |          |         |
|       |    | B.E.P.         |          | 730      |          |          | 300     |
|       |    | B.P.P.         |          |          |          |          |         |
|       |    | T.A.           |          | 500      |          |          |         |
|       |    | S.A.P.         | (3000)   |          |          |          |         |
|       | 計  | 650<br>(3000)  | 1230     |          |          | 300      |         |
| B-II  |    | 水源地            | 5000     |          | *650     | 650      |         |
|       |    | B.E.P.         |          | 730      |          |          | 1000    |
|       |    | B.P.P.         |          |          |          |          |         |
|       |    | T.A.           |          | 500      |          |          |         |
|       |    | S.A.P.         | (3000)   |          |          |          |         |
|       | 計  | 5000<br>(3000) | 1230     | *650     | 650      | 1000     |         |
| B-III |    | 水源地            | 650      |          |          | 650      |         |
|       |    | B.E.P.         |          |          |          | 730      |         |
|       |    | 計              | 650      |          |          | 1380     |         |

\* インドネシア国に1/50,000の用意がない場

(6) F/S 実施計画の検討

図化計画案およびF/Sの対象地区の計画案はそれぞれABC、I II IIIの各3案が考えられ、その組合せより実施可能なF/S案は、

A-I, II

B-II, III

の4ケースとなる。

この4ケースについて、地形図作成、F/S Pre F/Sの実施計画を樹てると次表のとおりとなる。

① A-I

ラナク湖水源に見合う地区のみの既存写真の1/10,000とB.E.P.の第1ステージ(ピサンを含む)19,500 haのF/Sを実施すると、2ケ年で完了する。しかしこれまでの要請や諸調査とはかなり構想が相違する。

D/D に対して正確な資料を確保できること。

(8) コメリン川地区航空写真測量費内訳(推定)

I. ランボン地区(500 Km<sup>2</sup>)

1. 金額 a. 航空写真撮影 US\$ 65,000

2. 工程 6月 7月 8月 9月 10月 11月 12月 1月 2月

a. 対空標識設置 15日

b. 航空写真撮影 110日

3. 作業内容

a. 対空標識設置: 5点(航空写真撮影前)

b. 航空写真撮影

面積: 500 Km<sup>2</sup>

縮尺: 1:20,000

II. ブリタン地区(730 Km<sup>2</sup>)

1. 金額 a. 航空写真撮影 US\$ 100,000

b. 現地測量 US\$ 200,000

c. 国内図化 US\$ 150,000

合計 US\$ 450,000

2. 工程 6月 7月 8月 9月 10月 11月 12月 1月 2月

a. 対空標識設置 15日

b. 航空写真撮影 120日

c. 現地測量 65日

d. 国内図化 120日

3. 作業内容

a. 対空標識設置: 6点(航空写真撮影前)

b. 航空写真撮影

面積: 730 Km<sup>2</sup>

縮尺: 1:20,000

c. 現地作業

ドブラー点: 6点

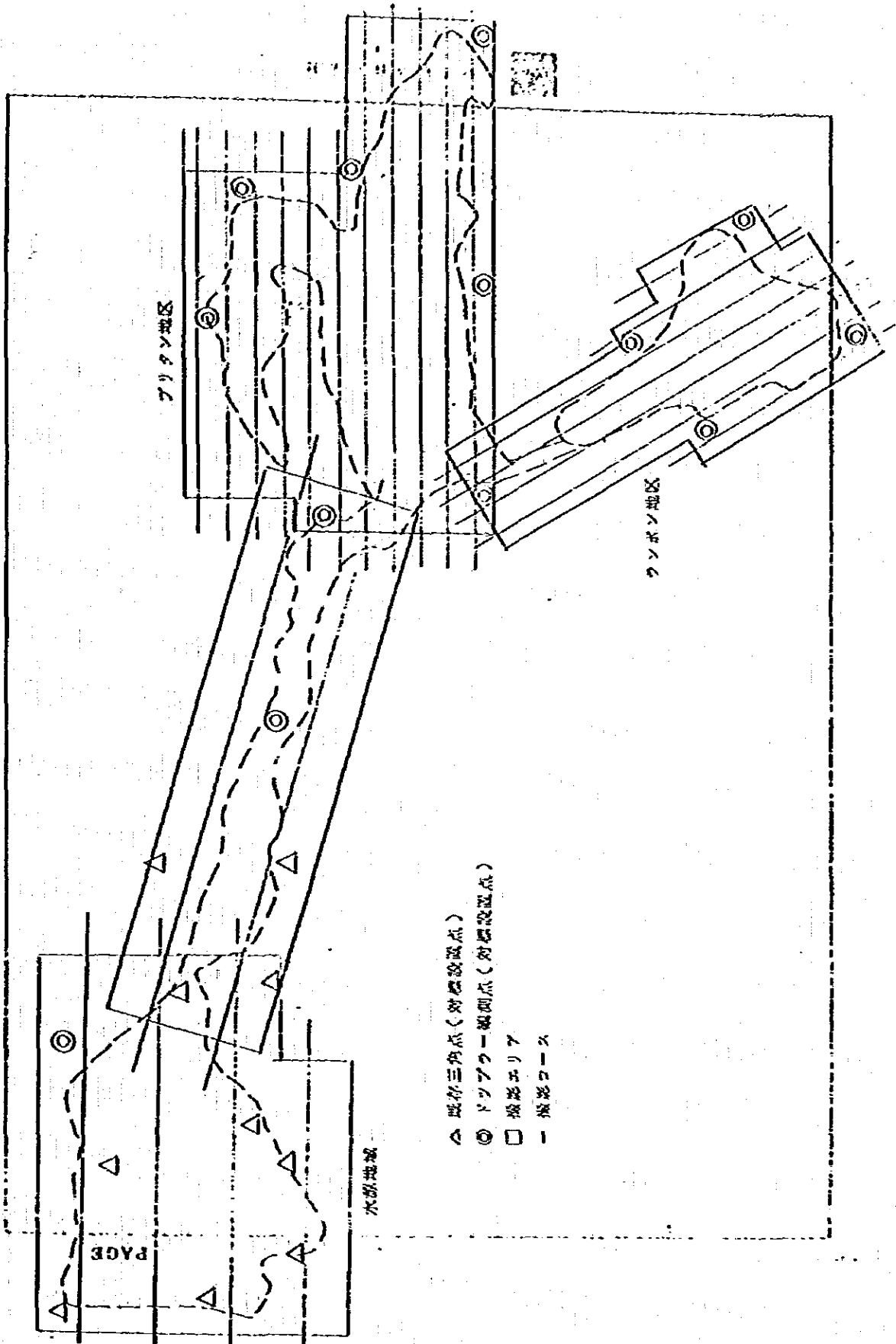
水準測量: 200 Km

現地調査: 主要地域

d. 国内図化

図化面積: 300 Km<sup>2</sup>

第V-2図 インドネシア国コメリン川地区航空写真測量計画図



縮 尺 : 1 : 5,000

航空三角 : 195 モデル

Ⅲ. 水源地域 ( コメリン川上流 ) ( 650 Km<sup>2</sup> )

1. 金 額      a. 航空写真撮影    US\$ 60,000

2. 工 程                      6月   7月   8月   9月   10月   11月   12月   1月   2月

a. 対空標識設置            |——| 15日

b. 航空写真撮影            |—————| 120日

3. 作業内容

a. 対空標識設置 : 12点 ( インドネシア側に航空写真撮影前にやってもらう。 )

b. 航空写真撮影

面 積 : 650 Km<sup>2</sup>

縮 尺 : 1 : 50,000

(9) F/S の実施方針

以上の検討により、F/S 対象地区は、B.E.P. (I) として 19,500 ha とした。ただし、イ国政府と打ち合せの結果、F/S に先立ってコメリン川全流域の総合的水資源開発計画を樹て、その計画に基づいて F/S 地区の水収支を計ること、および B.E.P. (II) ( 28,500 ha ) と T.A ( 33,000 ha ) およびその水源、並びに発電計画については Pre F/S として計画することとした。そのスケジュールは附属資料 O-1 Attachment 2 のとおりであり、また各調査の月別要員計画は次表のとおりである。

スケジュール作成上考慮された事項は次のとおりである。

- ① 調査期間は3カ年とし、F/S は極力早期に終了し事業着手を早めることから第2年目  
に実施することとした。
- ② 最終報告書 ( Final Report ; F.R. ) は、各調査毎とりまとめる。また報告書案 ( Dra-  
ft Report ) は、両国の予算編成期までには各調査とも作成する。
- ③ イ国政府の要望として、各調査の内業はできる限り現地で進めるか、あるいはカウンタ  
ーパートを日本国に出張させ、技術研修をさせたいとする主張があり、各調査には現地内  
業を考慮している。
- ④ 各調査の最終段階には、計画書についての顧問団を派遣する。





|         | 年度     | 1979  |    |   |  | 1980 |    |   |  | 1981 |    |   |  | 1982 |    |   |  | 1983 |    |   |  |
|---------|--------|---|----|---|--|------|----|---|--|------|----|---|--|------|----|---|--|------|----|---|--|
|         |        | 季 别   |    |   |  | 季 别  |    |   |  | 季 别  |    |   |  | 季 别  |    |   |  | 季 别  |    |   |  |
|         |        | 7   | 10 | 1 |  | 7    | 10 | 1 |  | 7    | 10 | 1 |  | 7    | 10 | 1 |  | 7    | 10 | 1 |  |
| A<br>I  | 地形区作成  |   |    |   |  |      |    |   |  |      |    |   |  |      |    |   |  |      |    |   |  |
|         | 航空写真撮影 |   |    |   |  |      |    |   |  |      |    |   |  |      |    |   |  |      |    |   |  |
|         | 現地測量   | $\frac{6}{R} \frac{A}{A-300} \frac{115}{A-300} \text{BEP(1)}$ |    |   |  |      |    |   |  |      |    |   |  |      |    |   |  |      |    |   |  |
|         | 国内区化   |   |    |   |  |      |    |   |  |      |    |   |  |      |    |   |  |      |    |   |  |
|         | F/S    |   |    |   |  |      |    |   |  |      |    |   |  |      |    |   |  |      |    |   |  |
| A<br>II | 地形区作成  |   |    |   |  |      |    |   |  |      |    |   |  |      |    |   |  |      |    |   |  |
|         | 航空写真撮影 | $\frac{6 \text{ (K99-17)}}{A1800} \frac{\text{BEP1}}{A300}$   |    |   |  |      |    |   |  |      |    |   |  |      |    |   |  |      |    |   |  |
|         | 現地測量   |   |    |   |  |      |    |   |  |      |    |   |  |      |    |   |  |      |    |   |  |
|         | 国内区化   |   |    |   |  |      |    |   |  |      |    |   |  |      |    |   |  |      |    |   |  |
|         | F/S    |   |    |   |  |      |    |   |  |      |    |   |  |      |    |   |  |      |    |   |  |
| B<br>I  | 地形区作成  |   |    |   |  |      |    |   |  |      |    |   |  |      |    |   |  |      |    |   |  |
|         | 航空写真撮影 | $\frac{6 \text{ (K99-17)}}{A1800} \frac{\text{BEP1}}{A300}$   |    |   |  |      |    |   |  |      |    |   |  |      |    |   |  |      |    |   |  |
|         | 現地測量   |   |    |   |  |      |    |   |  |      |    |   |  |      |    |   |  |      |    |   |  |
|         | 国内区化   |   |    |   |  |      |    |   |  |      |    |   |  |      |    |   |  |      |    |   |  |
|         | F/S    |   |    |   |  |      |    |   |  |      |    |   |  |      |    |   |  |      |    |   |  |
| B<br>II | 地形区作成  |   |    |   |  |      |    |   |  |      |    |   |  |      |    |   |  |      |    |   |  |
|         | 航空写真撮影 | $\frac{6 \text{ (K99-17)}}{A1800} \frac{\text{BEP1}}{A300}$   |    |   |  |      |    |   |  |      |    |   |  |      |    |   |  |      |    |   |  |
|         | 現地測量   |   |    |   |  |      |    |   |  |      |    |   |  |      |    |   |  |      |    |   |  |
|         | 国内区化   |   |    |   |  |      |    |   |  |      |    |   |  |      |    |   |  |      |    |   |  |
|         | F/S    |   |    |   |  |      |    |   |  |      |    |   |  |      |    |   |  |      |    |   |  |

注) 1. A: 面積, R: 雨量 M: 航空写真撮影 ( ): 雨量 BEP(1): 1/300mm 降雨量  
 WRD: Water Resources Development  
 2. 航空写真撮影の6分は欠損のとおり。

## IV-2. 今後の調査方法

### (1) 気象水文調査

#### ① 降雨量、河川流量等

- ・前掲の関連地域概要図に示した如く、降雨等一般気象の観測点数、および河川流量の観測点数とも現況では不足している。すなわち、本計画に関係する地域内では、気象観測所がラナウ湖ほか4点、河川水位観測所がラナウ湖ほか5点に過ぎない（詳しくは付属資料2-2①参照）。その他、トランパワン地区についても何点かの観測所があるかも知れないが、今回調査からはデータ入手ができなかった。
- ・したがって、今後、地区計画を詰めるにあたっては、新たに、ムアラドリ地点、3rdステージ末路地点、クンプ〜ピサン両河川合流点、T.A末路地点等での河川流量観測、およびカユマグンならびにトランパワンでの気象観測が必要と考えられる。（関連地域概要図参照）
- ・しかし、新たな観測所の設置による観測データは、その期間の短かさから、直ちに計画に用いることは期待しがたい。したがって、既存の観測データの詳細な解析を、付属資料2-2②“Hydro-meteorological Analysis and Evaluation”等、有用な資料を参考にしつつ進める等の方法を併用するのが实际的である。

#### ② 必要水量等

- ・FAO報告書では、水稲、畑作物共蒸発散量等、必要水量算定の基礎となるデータが不十分であったため、修正Blaney-Criddle法を用いて必要水量を推定する等、全体に仮定に基づく計算値を用いている。
- ・したがって、今後の詳細な計画策定のためには、ライシメーターやEvaporation Pan、減水深測定、或いは畑作を導入するならテンシオメーター等各種の計器観測データの積上げが不可欠である。
- ・一方、前述（付属資料2-2-②参照）の如く、乾季作と雨季作は、必ずしも各々に独立している訳ではなく、その作期が互いにオーバーラップしていることから、各作毎の必要水量の計測だけでは十分とは云えない。したがって、代播準備や代播期をも含めた全体的な作期の検討を既存のB.P.P.等での実態調査によって行う必要がある。このことは、田面有効雨量のとり方等と密接な関係を有するものである。

#### ③ Sediment

- ・ムンチャッカバウ取水工、コモリン河貯水池、あるいは地区内水路の管理等の問題を詳細に詰めるためには、河川のもたらすSedimentの実態を把握することが重要となる。
- ・FAO報告書は、クルンガンニョリ取水工地点における修正Einstein法によるSediment量（1967年〜1971年）の平均値 $830m^3/km^2/年$ を用いて、ダム堆砂量を算

定している。

- 今後の調査としては、このように方法を、ムアラドリ地点ムンチャカバウ、その他数点で、経年観測すると共に、例えば日本の建設河川局の方法や石外の方法等を併用して、各地点、期別のより詳細なDataを入手する必要がある。

## (2) 地形地質調査

### 1. 地形調査

計画地区 8 1,000 ha については、 $1/50,000$  図化が既にイ国において完成している。また F/S に先立って  $1/5,000$  図化が、19,500 ha の B.E.A (I) について完成される予定である。ただし水源地については、ラナウ湖集水域の一部および、コメリン川支流サカ川 (Saka River) の流域の一部が  $1/50,000$  の図化がなされていない。しかし、F/S および Pre F/S 作業は  $1/500,000$  図で構えば、必要なデータは得られよう。コメリン川全域の水資源開発計画 (Comprehensive Water Resources Development) についても同様である。

F/S のプラチャック頭首工 (Pratjak Division Weir) およびラナウ湖放水工 (Lake Ranau Intake) の地形図は、現地測量で  $1/5,000$  図あるいは  $1/10,000$  図 (あるいは写真) を持つ必要があろう。

Pre F/S のムンチャカバウ取水工 (Muntyakkabau Intake) あるいは T.A. に至る用水路については部分的に  $1/5,000$  図化により計画の精度を上げる必要がある。とくに T.A. に至る用水系統については、トンネルとなるか開渠となるかさらにウンブ川 (Unpu River) あるいは T.A. 田面標高との関係を明確にするため  $1/5,000$  図は必要である。

B.E.A. (II, III) について、現在の天水田部および将来の畑かん部の区分や用水系統および受益地取入れの可否については、航空写真あるいは部分図化が必要となろう。

またプラチャック頭首工の河川縦断測量は 100 m 毎および勾配変更 について、上下流とも最低 1 km を行うべきである。

### 2. 地質調査

#### ① ラナウ放水工

放水ゲート 2 基礎および接続放水路の開削計画に必要なボーリングを着岩 5 m 程度の深さ (推定 20 m) で 2~3 本は必要であろう。上砂部は N 質岩盤部は透水試験を行うべきである。

#### ② プラチャック頭首工

両岸共泥岩の露頭は確認されているが、河床により開析された河床部については、砂レキの堆積深を確認しなければならない。乾季河床部砂礫部について 2 本以上着岩 5 m 程度が必要である。できる限り物理探査 (電探あるいは弾性波探査) を行なって頭首工

採掘方向の岩質分布を明確にすることが望ましい。

- ③ ダム、発電所計画のため地質調査はコモリン川上流については、調査用の道路が建設困難であると考えられ、地質専門家による現地踏査程度であろう。マラドア (Muara-dua) 地点におよびサカ川については、ボーリング調査も可能である。
- ④ B.E.A(II)の幹線用水路は、断面規模が大きいため、掘削計画に必要なボーリング (着岩をみる) を2~3点行うべきである。
- ⑤ ムンチャカバウ取水工地点は岩盤が露頭しており、地質調査は踏査で充分であろう。

### 3. 土質調査

- ① ダム計画は、フィルダムとなる可能性が高く、したがって築堤用土の調査が必要である。
- ② 航空写真および既存の地質図、 $1/50,000$  地形図より用土採取地の概定を行う。
- ③ 代表サンプルの採取を行う
- ④ 土質試験を行い物理的特性および力学的特性を把握する。
- ⑤ 地質踏査時、ロック材のサンプル採取を行ない岩質試験を実施する。(強度および吸水率、比重程度)

### (3) 開発計画の検討

#### ① 総合的水資源開発計画について

- a. コモリン川全流域について、オガン川合流点までを含むO.K.U.、O.K.I.両県に及ぶ地域を対象とする。
- b. 水資源開発には農業用水、発電用水、生活用水 (Domestic Water) を対象とするが舟航 (主として Bamboo Ferry) および下流域の治水および湛水を考慮すること。
- c. 下流域についての湛水とはカユアグン (Kuyuangung) 附近における、コモリン川よりオガン川への流水流去し、濁水状態による環境悪化の改善のための湛水または河水の貯溜を意味する。
- d. 上下流域共段階的开发が必要である。上流域については、U.K.P.内のステージ区分とともに移住政策と開田計画との整合性を、また下流域については、現在進行中のプロジェクトの対応およびS.A.P.地域の乾陸化と生活改善 (古来の水上生活慣習を陸上生活に改めること) 政策の進行を考慮する。
- e. T.A.地区については、クンプ川流域でもあり、かつ目下同水系でダム計画を始め農業開発計画がランボン州において進められており、コモリン川水源といずれが経済的か検討する。同時に州が異なる場合の利水管理についても検討する。
- f. B.E.P. (II) (III) ステージで乾季かんがい水稲作とある場合のダム計画については、B.E.P. (I) (F/S 対象の19,500 ha) およびT.A.を含むものとして検討する。

g. 発電計画は他の利水計画の必要水量を考慮に入れた出力、施設とする。

## ② 農業開発計画

- a. F/S対象の19,500haについては、現地調査の結果天水田として既に開発され乾季かんがいが必要としている現況と現地行政機関（農業普及所、郡役所）の意見を採用し、乾季全かんがい稲作とした。中央政府においても、ブリタンについては乾季全面積かんがい稲作とすべきとの意見が多い。しかしながらF.A.O.報告は水源開発との関係および将来展望の営農計画から乾季かんがい面積は約1/3とし残余は畑作導入を計画している。B.E.P.(Ⅲ)(Ⅳ) ステージおよびT.A.では、作物栽培計画を再検討する。
- b. そのためには、インドネシア全国の米の生産予測および消費量の予測ならびにそれについての政策方向を採る必要がある。
- c. 経済効果の大きな作物（ゴム、コーヒー、丁香、その他）の導入については充分考慮する。
- d. 役畜および機械力の導入計画について経済的検討ならびに組織機構の整備の検討が必要である。
- e. 病虫害防除方法および組織を整備強化する必要がある。

## ③ 土地利用計画

- a. B.E.P.(Ⅲ)の丘陵部の乾季畑地化あるいは全季畑地化については、用水計画、作物栽培計画との関連で決定する。
- b. 田畑輪換計画が採用された場合には灌漑排水計画を整備し、乾田化を計る。
- c. B.E.P.(Ⅳ)の密林地帯については、農地造成方法と農業導入の関係（例えば焼畑農業とするか一部林業、果樹を考えるか）を検討する。

## ④ 用水計画

- a. 用水系統については、B.P.P.の排水を考慮整備する。
- b. T.A.については、ウンブ川取水を併用する場合、コモリン川よりの用水をどのように配置するか検討を要する。
- c. 地区内反覆水の利用についてルール化する。地区内排水網を検討する。
- d. 畑地かんがいの必要性および畑地かんがいを行う場合の使用水量の根拠を明らかにする。
- e. 用水量決定の諸元を究明する。

## ⑤ 施設計画

- a. ラナウ湖水源については、湖の利用上環境保全上平水位より堰上げるべきか放水路の敷を下げゲートアップすべきかあるいはその両者の併用か検討する。
- b. ダム計画は発電計画と関連して検討するが、コモリン川支流ナカ川も有望である。た

- だしリカ川については洪水区域に鞍部が存在するので、地形地質上の検討が必要である。
- c. コメラン川からの取水工については、流合堰案もあるが、81,000 ha の全量とする事の可否およびB.P.P.をも加えることの可能性について検討する。
  - d. ムンチャカバウ取水工およびクルスガンニャワ取水工 ( Kurungan Njwa ; B.P.P. の既設取水工 ) については乾季取水、および排砂工 ( 沈砂池か排泥工かあるいは土砂流入防止工法 ) について構造的検討を行う。
  - e. 幹線用水路の断面計画 ( 築工の有無の長短 ) を検討する。

### ⑤ 施設管理計画

- a. 管理システムの段階的設定を検討する。
- b. 発電計画と施設管理電力の利用実施時期の設定を検討する。
- c. 舟航施設の管理方法の検討を行う。
- d. 管理技術・組織の確立の方途を策定する。とくに受益団体の育成組変化を計るための方途を探る。

### (1) 農業計画

プロジェクト実施後、計画の効果を十分上げるためには下記の措置を考慮する必要がある。

- ① 現地に適合する栽培方法の確立。水稲、陸稲、キャッサバ、大豆、ピーナッツ、トーマロコソ、ソルガム、サトウキビ等についての品種比較、施肥量、栽培密度、稲作時期等栽培試験がFAOによって1972年、1973年に行われているが、水稲以外についてはデータ不足なので早急に栽培試験を行い、現地に普及する技術を確立する。地域内に用水が供給される前から予めパイロット、ファームを設置し、試験、展示栽培を実施しておくことが必要であろう。
- ② 収分量 1.7 トン/ha を平均的にあげるには、品種の選択、育苗、施肥、水管理、病虫害、収穫調整、ねずみ害等を考慮したトータルな営農技術の普及が必要である。営農技術の普及には農村の核となる先進農家 ( Key farmer ) の育成が重要であり、先進農家の育成、指導には、栽培試験、展示栽培の機能をもつパイロットファームの設立が必要であろう。
- ③ 種子センター及び農業資材の供給対策。  
仮に、19,500 ha に水稲二毛作を導入すると、種子約780トン～1,170トン ( 20～30 Kg/ha として ) が一年間に必要であり、肥料については尿素を2340トン、重過石1,755トン ( 尿素60 Kg/ha、重過石45 Kg/ha として計算 FAOによる奨励施肥量 ) が必要になってくる。  
種子については種子センターを設置し、パイロットファームと協力して優良品種の貯蔵及び採種圃の指導を行ない、肥料、農業については既存の農協を十分に生かしてそれらを保管、供給させることも十分に検討する必要がある。

④ 病虫害発生予察センター及び共同防除組合の設置。

水稲二毛作の穀倉地帯が形成され、かつ高収量を目標においた栽培が実施されると病虫害の防除が問題になりやすい。病虫害については発生を予察し、予防するのが最も経済的効果的であり、農薬の使用量も少なくかつ安全である。そのために発生予察センターを設置し、もし薬剤散布が必要なときは最も効果的で地域的な共同防除を、機械化し、防除効果を高めると共に人体についての安全を計る。

(5) カンガイ計画

① 営農計画との関連

FAO報告書では、B.E.P. 48,000 haの内、36,100 haを水稲2期作、残余の11,900 haを畑作物として、カンガイ計画を樹てている。

しかし、今回調査では、B.E.P.の相当面積(農業計画の項参照)が既に天水田として耕作されていること、イ国の食糧農業事情から来る米への強い指向、ならびに現地政府の意見を反映して、全面積(T.A.を含む)を水稲2期作とすることで、カンガイ計画を検討した。

したがって、今後の調査では、FAOの掲げる一部畑作を採るべきか、全域水稲2期作とすべきかを、現地での地形、土性調査や、営農計画と併せて詳細に検討する必要がある。

② T.A.の扱い

トランバワン川水系には現在、ウンブー地区、他のカンガイ地区があり、かつ、公共事業省内では新たな水源手当による既存地区拡張の検討もなされているようである。

一方、施設計画の面からは前述の如く、コモリン川ムアラドリ地点での貯水池新設には地形上の制約からT.A.をも包含することが可能か否か疑問視される点がある。

したがって、T.A.のカンガイ計画については、今後、基本的に検討する必要が考えられ本計画地区に対するB/C Ratioとも関連させて慎重に検討することが肝要である。

③ ラナウ発電計画との関連

FAO報告書によれば、ラナウ湖からムアラドリ町に到るコモリン川上流急流部での発電計画は全体で約13万kW、内、最高流のラナウ発電計画はピーク容量で21,600kWとなっている。

今回調査でも、この発電計画に基づき、ラナウ湖からの年間総流出量552百万 $m^3$ の内雨季の発電用放流分を除く残余の231百万 $m^3$ をカンガイ利用可能水量として、その受益面積を算定した。

しかし、発電全体計画の内、最上流のラナウ発電所の占める比率は、約16%に過ぎない。したがって、仮りに、このラナウ発電所を廃止あるいは、縮小しても、発電全体計画に対する影響は比較的小さいのに対し、カンガイ面積は2倍以上に変更できる可能性があ



る。

今後の調査では、この点を、ラナウ湖水域変動による湖水周辺への影響を勘案しつつ再検討する必要がある。

#### ④ 地区内水利用と管理体制

既存のB.P.P.に例をとれば、他区を縦貫する幹線水路には、19ヶ所の分水工(B.K.と称している)があり、これに続いて2次水路、3次水路および圃場内水路により用水の管理がなされている。

現地調査によれば、幹線水路から2次水路への分水工にのみ手動式ゲートが施こされており、流量調節は、分水地点の水位を計ることにより行なわれている。

2次水路以降は、ゲート設備がない(注、角落し用の戸当りだけはついていた)ので、流量調整はできないのが現状である。

加えて、現地担当者の説明によれば、この地域では、3次水路(Tertiary)を100haに1条程度配置することが望ましいと考えられるが、実際には、200~300haに1条となっているため、末端での水管理が極めて不十分である。

また幹線水路等の基幹施設は、政府機関が管理しており、受益農民は管理費(Water Tax)を納めることにより施設管理の賦役を免がれているが、政府による管理の実態は粗放で、幹線水路と云えども、水草の繁茂や、土水路翳法面の崩壊等により通水機能の低下が著しい。

以上のような既存地区での水利使用および水管理の実態を見るに、地域全体の水収支や基幹施設の検討のみならず、末端での管理体制や圃場内の小施設の有り方が全体カンガイ事業の効果に大きな影響を与えていることがうなずかれる。

したがって今後の調査では、この点に関する実態調査と改善策の検討ならびに末端施設管理のための技術移転の方法論の検討が必要と考えられる。

#### (6) その他

##### ① 生活用水の改善

途上国の通例として、本計画地域でも、生活用水は、洗顔から煮たき、排便に到るまで混然一体として同一の水源(例えばカンガイ水路の水等)に依存しており、衛生状態は極めて悪い。乾季には、この傾向が特に顕著であると思われる。

このような現状の改善についても、本計画の検討作業の中で取りあげる必要がある。

##### ② 村落道路と流通機構の整備

計画地区内の幹線道路については、アスファルト舗装等が考えられるが、地区内の毛細血管に相当する村落道路あるいは圃場内道路については一般に見逃がされがちである。

しかし収穫物の搬出や営農資糧材の搬入等に不可欠な末端道路網の整備状況如何は、地

区計画の目標達成に密接な関係を有している。

同様に、収穫物の集荷地、あるいは営農・生活資材の入手地としての地区の流通センターの整備も極めて重要な課題となろう。この点も、調査の対象に加えるべきである。

## V 今後の協力方向

様返し述べてきたように、本計画にかかるインドネシア側の熱意は相当なものがある。その背景としては、

1. 開拓適地としてのスマトラ島南部のうち、ジャカルタに近いランボン州はほぼ開発の第一段階を終了するに至り、つぎは南スマトラ州の番であるという認識
2. 移住政策との関連

等があるわけで、それだけにインドネシア側の構想は壮大である。もとより虫食い状の開発よりも全体構想によるシステムチックな開発が望ましいわけで、本計画は南スマトラ州全体の開発計画の中心をなすものである。従って日本側としてもイ側の要請にできるだけ応える必要がある。但しいくら気宇壮大であっても夢物語になってはいけないのであって、実現可能な計画の樹立という観点も重要である。現実にはインドネシアは開発資金を自力ではまかなえないのであり、他国に資金援助を頼るとしたら援助国第1位の我が国が当然クローズアップされてくるわけである。となると円借款にふさわしい事業規模という点も考慮されなければならないだろう。この点で壮大な構想のうちの段階的開発、あるいは部分的開発という手法がとられなければならない。この選択は今後の本格調査のなかで更に充分検討されなければならない。今回本報告書において提案された19,500 haの開発計画は部分的開発とも云えるが、今すぐ手をつけることができ、標準構想に手戻りを生じる恐れのない点から、当然の帰結であろう。本地区を全体構想のモデル地区として、できるだけ早く工事完成に導くことが全体の開発の促進につながる。

またここで19,500 haのフィーシビリティー、スタディーから借款・工事に至るプロセスとは同時併行的に、当該地域での農業の成功という目的に達するためのさまざまな手段について考慮が払われなければならない。即ち、本計画の樹立のためには改良品種又は高収量品種の導入が不可欠であり、そうすると受益農民の在来農法では適合しなくなるわけで、このために水管理や営農分野に於けるさまざまな技術についての協力が、研究や普及も含めて必要となろう。例えば、隣のランボン州においてはテギネタンの農業センターが日本の協力の下にそのような活動を行っているか、この方法を基盤整備事業の進歩と併せて、システムチックに展開する必要がある。更に流通の分野にも充分な考慮が払われなければならない。このようなプロジェクト協力が実施されるためにはその活動の本拠となるセンターの建物が必要となりその設備等も含めて無償援助の考慮が必要となるかもしれない。又同時に上記の農地造成、水管理、営農等を中核農民等にデモンストレーションするために、予め1,000 ha程度の規模で実態に展示するのも効果ある手法であろう。

いずれにしてもいろいろな手法を展開するには前もって現地に専門家を駐在させ、様々な協力事業の展開の計画又は調整にあたらせると時系列的に整然とした協力が行われなければならない。

イ側の人的・資金的能力をにらみながら外国援助の組合せを考慮した計画を樹立する必要がある由縁である。

## あ と が き

1ヶ月足らずの滞在であったが、われわれを感動させ開発調査の情熱をかき立たせたものは、この国のあり余る土地と水と太陽であった。これ程の資源に恵まれ、また

Selamat Datang Belitang (ようこそブリタン村へ)

Selamat Jalan Belitang (さようならブリタン村より)

と町や村の出入口に、必らず標識を立てて、旅情を慰めてくれる心遣いこの国の人々ではあるがまだ多くの人々は貧しく、生活の向上は遅々として進んでいない。スワンプエリア(沼沢地)の人々がいつの日にか干陸の農耕地で機械化農業を営むようになるのか？それは、四半世紀であろうか半世紀であろうか、いずれにしても次の世紀の庶民であろうか。なおまたスワンプエリアのみならず、大規模開発が現に進みまたさらに今回調査を契機にさらに拡大されようとしているブリタン地区においてさえ、機械化は皆無のみならず、役牛さえも極く僅か散見される状況なのである。

インドネシア為政者の、またわれわれの為すべきことはあまりにも多く、また急がれるのを強烈に感じつつも、反面数十万ヘクタールといわれるコメリン川流域の開発地域の僅か2万ヘクタール弱の土地の開発計画調査をスタートさせることは、牛歩の一歩と意識せずにはおられない。しかしながらこの一歩が、ブリタン全域をおおい、トランパワンに至りさらにはスワンプエリアに及ぶであろうことを祈るような気持で信じたのである。

われわれの調査を強力に支援したインドネシア国Officersや、連日超過勤務を強いられたカウンターパート、そして酷暑の中で精力的な調査活動をなしとげた団員諸君の情熱が、必ずこのプロジェクトを押し進めるであろうし、また次のF/Sチームがその方途を定め、近い将来D/Dそして事業着手となるであろう。この19500ヘクタールのF/Sが、81000ヘクタールのコメリン上流域開発のパイロットとなることを期待したい。

最後にインドネシア国関係者、日本大使館、ジャカルタJICA事務所、そしてインドネシア国の日本人エキスパート、コロンボプランの専門家の協力に心から感謝を捧げこの報告を終りたい。

1978年12月19日(ジャカルタを去る日)

調査団長 特 保 昇



# 添 付 資 料





資料 ① 調査団現地提出資料

資料 0 - 1

MINUTES OF MEETING  
OF  
SCOPE OF WORKS FOR FEASIBILITY STUDY  
ON  
THE UPPER KOMERING RIVER BASIN DEVELOPMENT PROJECT  
IN  
THE REPUBLIC OF INDONESIA

The staff of Directorate General of Water Resources Development, Ministry of Public Works, and the Contact Mission for the Upper Komering River Basin Development Project (hereafter referred to as the Project), headed by Mr. Noboru Katsumata, Deputy Director, Construction Department, TOHOKU Regional Agricultural Administration Office, Ministry of Agriculture, Forestry & Fisheries, discussed and exchanged their views concerning the draft of the Scope of Works for Feasibility Study on the Project prepared by the Contact Mission.

Both sides agreed the draft of the Scope of Works (refer to the Attachment 1) and main items of understanding are as follows :

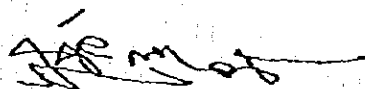
1. The comprehensive study of water resources and development plan on the whole area related to the Komering river basin will be done.
2. The area for F/S is 19,500 ha which comprises the area for 1st stage of Belitang Extension Project of FAO report and Pisang Area
3. The area of Belitang Extension Project excluding 19,500 ha said above, Tulangbawang Area, and hydropower will be studied in Pre-F/S.
4. Mapping on necessary area will be made in F/S with aerial photograph.

5. The work schedule of F/S will be commenced from 1979 and the period of 30 months.
6. The draft of the Scope of Works is formulated as the Attachment 1.
7. The findings of the Contact Mission is formulated as the Attachment 3.
8. Cropping pattern will be discussed in F/S based on FAO report. However, 19,500 ha for F/S is understood as irrigated paddy field area in the dry season.
9. The tentative list of the equipments to be provided by the team shall be submitted at the beginning of Feb. 1979, and the final list shall be submitted one month before shipping of the equipments.

#### Attachment

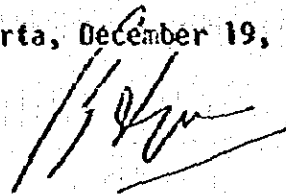
1. Draft of the Scope of Works
2. Tentative Work Schedule
3. Findings of Preliminary Survey for the Upper Komering River Basin Development Project
4. Attendants.

Jakarta, December 19, 1978



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MR. NOBORU KATSUMATA  
Leader of the Contact Mission  
for the Upper Komering River  
Development



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IR. BOESONO BOEIDARMO  
Director of the Directorate  
of Planning and Programming

SCOPE OF WORKS FOR FEASIBILITY STUDY  
ON UPPER KOMERING RIVER BASIN DEVELOPMENT PROJECT

1. In response to the request of the Government of the Republic of Indonesia (hereinafter referred to as "the Government"), the Government of Japan has decided to provide the technical services for the feasibility study on the upper Komering river basin development project (referred to as "the Project") as part of the technical cooperation program of the Government of Japan, in close cooperation with the Indonesian Authorities concerned, i.e. the Directorate General of Water Resources Development, Ministry of Public Works. The executing agency for the services will be the Japan International Cooperation Agency, which is the governmental organization responsible for implementation of the above-mentioned technical cooperation programme.

According to the FAO report entitled, "Land and Water Resources Development in South Eastern Sumatra" published in 1976, the Belitang extension area of 48,000 ha is potentially irrigable. The report above mentioned also identified the hydropower potential of the upper reach of the Komering river basin in view of the overall development of the basin.

Meanwhile the flat area of 33,000 ha located on the left bank of the Tulangbawang river is conceived as a possible irrigation area with the diversion of water from the Komering river.

Therefore the feasibility study and the pre-feasibility study on irrigation development and on hydropower development will be conducted stage by stage in each for ensuring the successful implementation of the program of the river basin development.

2. Scope of Works

- 2.1. Objectives

The objectives of the study will be :

- (1) To make comprehensive study on water resources development of the whole project area, prior to the feasibility study and the pre-feasibility study mentioned below.

- (2) to make the feasibility study on irrigation development covering a net area of about 19,500 ha.
- (3) to make the pre-feasibility study on the remaining area of about 61,500 ha to be irrigated, and on hydropower development of the upper reach of the Komering river basin in connection with point (1) and (2), and
- (4) to undertake the training of the Indonesian counterparts in the course of the survey and study, both in-country and in Japan.

## 2.2. Survey and Study

The survey and study to be undertaken by the survey team will comprise the following :

- (1) to review data and information collected during the study on water resources development, the formulated plans and their implementation program and to make supplementary study for improvement of them, if necessary.
- (2) to take aerial photograph 1:20,000 over an area of 81,000 ha to be irrigated and 1:50,000 over the catchment area of the upper reach of the Komering river.
- (3) to prepare the topographic maps with 1:5,000 for the feasibility study area.
- (4) to carry out the field investigation and survey including the following items.
  - (a) meteorological & hydrological survey including sediment load analysis of riverflow, test on river water quality and etc.
  - (b) topographic survey for major structure sites and check survey of the elevations along the main canal alignments for the F/S scheme.
  - (c) geological investigation for structure foundation at the sites of regulating dam, headworks and main canal by means of surface exploration and core drilling for the F/S scheme.

- (d) semi-detailed soil and land use survey including soil sampling and chemical analysis for the F/S scheme.
  - (e) irrigation and drainage survey
  - (f) agro-economic survey
  - (g) land reclamation survey
  - (h) agriculture survey including measurement of consumptive use by crop
  - (i) regional economic and institutional survey including power demand
  - (j) construction material and cost survey, and
  - (k) others, if necessary.
- (5) to establish the definite irrigation, drainage and road systems and to prepare the pre-design of the systems for the F/S scheme.
  - (6) to prepare the pre-design of the hydro-electric structures for developing the power generating potentialities of the upper Komering river basin.
  - (7) to make economic study and justification of the Project including cost and benefit estimates.
  - (8) to prepare an implementation schedule of the Project.

### 3. WORK SCHEDULE

In order to attain the on-the-job training and transfer of knowledge and technical know-how to Indonesian counterparts, the planning and design works will be carried out in Indonesia as much as possible. The time span required for the survey, study and preparation of reports will be thirty (30) months. The field survey will be carried out mainly in two dry seasons on three irrigation development areas delineated in view of efficient irrigation water supply system, namely Pratiak, Muntjakkabau, and Tulangbawang areas.

The aero-photographic mapping including field survey will be proceeded in conformity with the schedule of the irrigation and hydropower development planning to provide the necessary maps in time.

#### 4. R E P O R T

The following reports will be prepared and submitted to the Government in accordance with the Scope of Works set forth in Section 2 in the manner as specified hereunder.

- (1) Inception Report in thirty (30) copies in English within one month after the commencement of the works.
- (2) Interim Report in thirty (30) copies in English at the end of field works.
- (3) Reports on the F/S scheme
  - (a) Draft Feasibility Report in thirty (30) copies in English within two (2) months after the commencement of the home office works.
  - (b) Feasibility Report in fifty (50) copies in English up to the end of 1981.
- (4) Reports for the pre-F/S scheme.
  - (a) Draft Pre-Feasibility Report in thirty (30) copies in English within two (2) months after the commencement of the home office works.
  - (b) Pre-Feasibility Reports in fifty (50) copies in English up to the end of 1981.

#### 5. UNDERTAKING OF THE GOVERNMENT

To facilitate smooth performance of the survey and study, the Government is requested :

- (1) to provide for the team necessary entry and exit visas, residence and work permits, and travel permits if required for their stay in Indonesia.
- (2) to exempt the members of the Japanese survey team from income tax and charges of any kind imposed on or in connection with the living allowances remitted from abroad, and from import and export duties imposed on the member's personal effects, and instruments, equipments and materials necessary for the survey,

- (3) to obtain necessary permission for the aerial photography.
- (4) to allow all data and materials concerned (especially diapositive films and contact prints) to be taken out of the Republic of Indonesia and brought to Japan by the team subject to Indonesian security regulations.
- (5) to facilitate prompt clearance through customs of any equipments, materials and supplies required for the services and of the personnel effects of the team.
- (6) to provide the following counterparts to cooperate and assist the team during the survey and study without charging any cost to the team.

| Numbers of Speciality            | (A)  | (B)                             | (C)  | (D)                |
|----------------------------------|--|---------------------------------|--|--------------------|
| Speciality                       | Comprehensive study on Water Resources development | Feasibility Study for 19,500 ha | Pre-Feasibility Study for 61,500 ha & Hydropower | Aero-photo Mapping |
| Team leader of counterparts      | 1  | 1                               | 1  | -                  |
| Irrigation and drainage engineer | 1  | 1                               | 1  | -                  |
| Irrigation structure engineer    | -  | 2                               | 1  | -                  |
| Soil scientist                   | 1  | 1                               | 1  | -                  |
| Hydrologist                      | 2  | 1                               | 1  | -                  |
| Geologist                        | -  | 1                               | 1  | -                  |
| Hydro-power specialist           | 1  | -                               | 1  | -                  |
| Electric engineer                | -  | -                               | 2  | -                  |
| Mechanical engineer              | -  | 1                               | 1  | -                  |
| Astronomist                      | 1  | 1                               | 1  | -                  |
| Aero-economist                   | 1  | 1                               | 1  | -                  |
| Topographic surveyor             | -  | 2                               | 2  | 2                  |
| <b>Total</b>                     | <b>8</b>   | <b>12</b>                       | <b>14</b>  | <b>2</b>           |

Note; (A), (B), (C) and (D) will be done in phases.

The counterparts can continuously proceed from one phase to the other.

- (7) to arrange twelve (12) JEEP or PICK-UP and two (2) boats with drivers for carrying out the field works,
- (8) to provide for the team permission to enter, dig and peg in the Project area, taking into account the GOI regulations.
- (9) to provide for the team suitable office space with equipment and utensils for twenty (20) Japanese Experts in maximum in the job site during the period of the field works,
- (10) to arrange the lodging facilities to accommodate twenty (20) personnel in maximum at the nearest to the Project area, which will consist of twenty (20) private rooms in maximum with beds, water, light and other necessary utilities,
- (11) to provide available documents such as drawings, maps, statistics, data and information relating to the study.
- (12) to provide the necessary available materials and data for aerial photograph mapping,
- (13) to arrange the geotechnical investigations for the sites of the regulating dam, head works and major canal structure.
- (14) to provide for the mechanical and chemical analysis of soil samples taken from the Project area without charging any cost to the team,
- (15) to arrange for the team any other available facilities that may be required for the execution of the field works,
- (16) to maintain security of life and property of the team during their stay in Indonesia,
- (17) to provide for medical services for the team during their stay in Indonesia when necessary, and
- (18) to undertake to bear claims, if any arises, against the Japanese team members engaged in the survey 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 claims arising from the willful misconducts or gross negligence of the Japanese team members.



## 6. UNDERTAKING OF THE GOVERNMENT OF JAPAN

For the purpose of the survey and study, the Government of Japan will assist to the extent possible :

- (1) to send the Japanese survey team consisting of the following Japanese specialists,

| Specialist                                   | Number of Specialists  |   |  |                         |
|--|--|---|--|-------------------------|
|  | (A)  | (B)   | (C)  | (D)                     |
|  | Comprehen-<br>sive study<br>on Water<br>Resources<br>Development | Feasibili-<br>ty Study<br>for<br>19,5000 ha | Pre-Feasibi-<br>lity Study<br>for<br>61,500 ha &<br>Hydropower | Aero-photo<br>& Mapping |
| Team Leader                                  | 1  | 1   | 1  |                         |
| Irrigation Engineer Cum Topographic Surveyor | 1  | 2   | 2  |                         |
| Land Reclamation Engineer                    | -  | 1   | 1  |                         |
| Irrigation and Drainage Structure Engineer   | 1  | 2   | 1  |                         |
| Engineering Hydrologist                      | 2  | 1   | 1  |                         |
| Engineering Geologist                        | -  | 1   | 1  |                         |
| Hydro-power Specialist                       | 1  | -   | 1  |                         |
| Hydraulic Structure Engineer                 | 1  | 2   | 1  |                         |
| Agronomist                                   | 1  | 1   | 1  |                         |
| Soil Scientist                               | 1  | 1   | 1  |                         |
| Soil Surveyor                                | -  | 1   | 1  |                         |
| Agro-economist                               | -  | 1   | 1  |                         |
| Project Economist                            | 1  | 1   | 1  |                         |
| Electrical Engineer                          | -  | -   | 2  |                         |
| Mechanical Engineer                          | -  | 1   | 1  |                         |
| Regional Planner                             | -  | 1   | 1  |                         |
| Liaison Officer                              | 1  | 1   | 1  | *)                      |
| <b>T o t a l</b>                             | <b>11</b>  | <b>18</b>                                   | <b>19</b>  |                         |

\*) Note: Aero-photo & mapping will be done by contract

- (2) to transfer the knowledge to the Indonesian counterparts during the period of the survey and study, both in-country and in Japan,
- (3) to provide the equipment necessary for the purpose of the survey and study, and

- (4) to bear the charge of accomodation for the team.
- (5) to carry out the aerial photography and mapping.
- (6) to bear the charge for 12 vehicles and 2 boats required by the team.

ATTACHEMENT 2

TENTATIVE WORK SCHEDULE

| ITEM                       | 1979                             |     |     | 1980 |     |     | 1981 |     |     | 1982 |     |     |
|----------------------------|----------------------------------|-----|-----|------|-----|-----|------|-----|-----|------|-----|-----|
|                            | JEM                              | AMJ | JAS | OND  | JFM | AMJ | JAS  | OND | JFM | AMJ  | JAS | OND |
| Preparation                |                                  |     |     |      |     |     |      |     |     |      |     |     |
| Aero Photo                 | ALL                              |     |     |      |     |     |      |     |     |      |     |     |
| Ground Control             | BEP I                            |     |     |      |     |     |      |     |     |      |     |     |
| Mapping                    | BEP I                            |     |     |      |     |     |      |     |     |      |     |     |
| Comprehensive Study W.R.D. | Field Office                     |     |     |      |     |     |      |     |     |      |     |     |
|                            | Inc R DR FR                      |     |     |      |     |     |      |     |     |      |     |     |
| Field Works                | TA EPP<br>BEP II DSA             |     |     |      |     |     |      |     |     |      |     |     |
| Home Office Works          | Inc.R DR<br>TA EPP<br>BEP II DSA |     |     |      |     |     |      |     |     |      |     |     |
| Reporting                  | ALL<br>FR                        |     |     |      |     |     |      |     |     |      |     |     |
| Feasibility Study          | BEP I                            |     |     |      |     |     |      |     |     |      |     |     |
|                            | Inc.R, Inc.R DR<br>BEP I         |     |     |      |     |     |      |     |     |      |     |     |
| Reporting                  | FR                               |     |     |      |     |     |      |     |     |      |     |     |
| Dispatch of Advisory Group |                                  |     |     |      |     |     |      |     |     |      |     |     |

Remarks BEP: Belitang Extension Project (48,000ha) W.R.D: Water Resources Development Inc R: Inception  
 TA: Tulangbawang Area (33,00ha) EPP : Electric Power Project Inc R: Interim Report  
 BEP I: BEP 1st stage (19,500 ha) DSA : Dam Site Area D.R : Draft Report  
 BEP II: BEP 2nd stage (28,500 ha) F.R. : Final Report  
 ALL : Area, the project concerned (81,000 ha and Catchment Area)

1. The first part of the document discusses the importance of maintaining accurate records of all transactions and activities. It emphasizes that proper record-keeping is essential for transparency and accountability, particularly in the context of public administration and financial management. The text highlights that without reliable records, it becomes difficult to track expenditures, identify inefficiencies, and ensure that funds are being used for their intended purposes.

2. The second part of the document focuses on the role of internal controls and audits in preventing fraud and mismanagement. It states that a robust system of internal controls is necessary to detect and deter any irregularities. Regular audits, both internal and external, are crucial for verifying the accuracy of the records and ensuring compliance with applicable laws and regulations. The document also mentions that audits help in identifying areas for improvement and strengthening the overall governance structure.

3. The third part of the document addresses the need for transparency and public access to information. It argues that citizens have a right to know how their tax money is being spent and to hold their representatives accountable. This is achieved through the publication of financial statements, budgets, and other relevant documents. The text suggests that transparency not only builds trust but also encourages better decision-making and resource allocation.

4. The fourth part of the document discusses the importance of training and capacity building for staff involved in financial management. It notes that well-trained personnel are essential for the effective implementation of financial systems and internal controls. The document recommends regular training programs and workshops to keep staff updated on the latest practices and technologies. Additionally, it suggests that capacity building should focus on both technical skills and ethical values to ensure that staff can handle their responsibilities with integrity and competence.

5. The fifth part of the document concludes by summarizing the key points and reiterating the commitment to high standards of financial management and transparency. It states that the organization is dedicated to ensuring that all financial activities are conducted in a fair, open, and accountable manner. The document also expresses a commitment to continuous improvement and to seeking feedback from stakeholders to enhance the effectiveness of the financial management system.

(資料 - 3)  
Attachment 3.

FINDINGS OF PRELIMINARY SURVEY  
FOR  
UPPER KOMERING RIVER BASIN DEVELOPMENT PROJECT  
IN  
THE REPUBLIC OF INDONESIA

December 1978

Japan International Cooperation Agency  
Tokyo

## C O N T E N T S

1. Objectives
  2. Requests of Government of Indonesia
  3. Schedule of Preliminary Survey
  4. Findings of Preliminary Survey
  5. Data Collected
-

Member of the Contact Mission  
JAPAN INTERNATIONAL COOPERATION AGENCY

Leader : Mr. Noboru KATSUMATA  
Deputy Director,  
Construction Department,  
TOHOKU regional Agri-  
cultural Administration  
Office,  
Ministry of Agriculture,  
Forestry & Fisheries

Irrigation and  
Drainage : Mr. Tooru MASE  
Specialist of Irrigation  
& Drainage, Agricultural  
Design Division, Agri-  
culture & Fisheries  
Department,  
HOKKAIDO Development  
Bureau,  
Prime Minister's Office

Cooperation and  
Planning : Mr. Yasumi YAMAGUCHI  
Senior Official  
International Coopera-  
tion Division,  
Economic Affairs Bureau,  
Ministry of Agriculture,  
Forestry & Fisheries

Agronomy and  
Coordination : Mr. Sataro YAZAWA  
Senior Instructor  
UCHIHARA International  
Agriculture Training  
Center, Japan Inter-  
national Cooperation  
Agency

## 1. OBJECTIVES

In response to the request of the Government of the Republic of Indonesia, the Government of Japan has decided to provide the technical services for the feasibility study on the Upper Komoring River Basin Agricultural Development Project as part of the technical cooperation programme of the Government of Japan.

Prior to the feasibility study, the Japan International Cooperation Agency, which is the governmental organization responsible for implementation of the above mentioned technical cooperation programme, has despatched the Contact Mission to carry out the preliminary survey with the following objectives:

- (1) To make reconnaissance survey on the project area.
- (2) To confirm the proposed benefited area of the Project.
- (3) To formulate the tentative schedule for the feasibility study.
- (4) To prepare the scope of works for the feasibility study.



## 2. REQUESTS OF GOVERNMENT OF INDONESIA

The Mission was requested at the visit to DGWRD, the Ministry of Public Works, to consider the following items in making the development programme of the Komering River Basin Development Plan.

- (1) The upper and lower Komering river basin development is to be identified as one project due to indivisible areas with regard to the water balance study.
- (2) In the water balance study, the flat area lying on the left bank of the Tulang-bawang river in Lampung Province and the Belitang-proper area are to be included.
- (3) In making the development plan, the hydropower development is to be included.
- (4) Mapping schedule is to be determined by the Mission based on the result of examination of available data on mapping.
- (5) The adoptable cropping patterns are to be examined.
- (6) The priority area to carry out the feasibility study is to be selected.

### 3. SCHEDULE OF PRELIMINARY SURVEY

- Nov. 27, 28 Visited to DPU, DGWRD for courtesy call and made discussion on the general views of the Komering river basin development including receipt of the requests from DPU to be considered in making development plan.
- Nov. 29 Arrived at Palembang from Jakarta. Visited to DPU South Sumatra for courtesy call and made confirmation of field survey schedule.
- Nov. 30 Visited to BAPPEDA South Sumatra. Made discussion with the technical staff of DPU South Sumatra on the Komering river basin development in the Province.
- Dec. 1 Left Palembang for Baturadja. Made field survey on the lower Komering basin Lebak Area, Belitang extension area, proposed Muntjakkabau intake site, existing Kurungannjawa intake being under improvement and proposed Pratjak head works site.
- Dec. 2 Visited OKU office for courtesy call and received the requests to the Mission. Visited Belitang Irrigation Office and

- made discussion with the technical staff  
of the office.  
Made field survey on Belitang Proper Area.
- Dec. 3            Made field survey on the upper reach of  
the Komoring rivor and dam sites for  
hydropower.
- Dec. 4            Made field survey on the regulating dam  
site of Lake Ranau.
- Dec. 5            Visited agricultural section Baturadja  
and made discussion on the possible  
cropping patters.  
Left Baturadja for Belitang proper area.
- Dec. 6            Made field survey on Belitang extension  
area.
- Dec. 7            Made field survey on Belitang extension  
area and Tulang-bawang area.
- Dec. 8            Left Belitang proper area for Palembang.
- Dec. 9            Made discussion with the technical staff  
of DPU South Sumatra on the findings of  
the survey.
- Dec. 10           Made preparation and examination of col-  
lected data and information.
- Dec. 11           Made discussion with DPU South Sumatra

- on the water development plan.  
Left Palembang for Jakarta
- Dec. 12 Visited to DPU, DGHRD, submitted Findings of Preliminary Survey and made discussion on the Findings
- Dec. 13 Left Jakarta for Bandung
- Dec. 14 Collected information and data for irrigation plan of the Belitung Proper Project at DPW, Bandung and agricultural data at Bogor.  
Arrived Jakarta from Bandung via Bogor.
- Dec. 15 Made discussion with officials of DPU DGHRD on F/S
- Dec. 16, 17 Made draft of S/W
- Dec. 18 Made discussion with official of DPU, DGHRD on draft of S/W,
- Dec 19 Made minutes of meeting.
- Dec. 20 Left Jakarta for Tokyo.

#### Schedule of Mr. Yamaguchi

- Nov.27 Dec.4 Together with the Contact Mission
- Dec. 5 Left Satoraja for Tanjungkarang
- Dec. 6 Left Tanjungkarang for Bandung. Collected information and data for the project.
- Dec.7-10 Left Bandung for Jakarta via Bogor. Joined to the Advisory Team of the Riam Kanan Irrigation Project,
- Dec. 12-15 Together with the contact mission.
- Dec. 16 Left Jakarta for Tokyo.

#### 4. FINDINGS OF PRELIMINARY SURVEY

This paper summarises the findings of the preliminary survey of the Mission conducted for the agricultural development on the upper Komering river basin through the reconnaissance survey and the careful analysis of built-up plans and their supporting data. In the light of efficient development of land and water resources of the Komering river basin, the survey was conducted on the areas including the lower Komering river basin.

##### 4.1 Constraints of Development

The possible development area of the Komering river basin is very large, and the physical and social facilities required for development are extensive. For the implementation of the development, a huge amount of funds and long terms construction period are required. Moreover, economic feasibility of the projects are largely affected by the topography, the present farming conditions and socio-economic conditions.

For the above reason, in spite of the identification of the development plans, they still remain not implemented.

## 4.2 Belitang Area

### (1) Belitang extension area

The Government has defined the land and water resources development projects of the upper Komering river basin with the assistance of the Food and Agricultural Organization of the United Nations under the Project entitled "Land and Water Resources Development in South Eastern Sumatra" in 1974.

The reconnaissance planning on the Belitang Extension Area, located on the right bank of the Komering river and continuously to the Hitam and Pisang rivers, was undertaken under the said project work.

#### Irrigation area

The reconnaissance planning revealed that about 48,000 ha out of the gross area 160,000 ha was promising development areas, based on a rough topographic map and reconnaissance soil and land capability surveys. It indicates that the Belitang extension area is divided into two development schemes from the view points of topography and irrigation sources and the following stagewise development is intended.

| <u>Development Scheme</u> | <u>Development Phase</u> | <u>Irrigation Area</u>     |                     |              |
|---------------------------|--------------------------|----------------------------|---------------------|--------------|
|                           |                          | <u>Lowland paddy field</u> | <u>Upland field</u> | <u>Total</u> |
| Pracak Scheme             | Phase-1                  | 14,300 ha                  | 1,700 ha            | 16,000 ha    |
| "                         | Phase-2                  | 14,700 ha                  | 5,600 ha            | 21,300 ha    |
| Muncakkabau Scheme        | Phase-3                  | 7,100 ha                   | 3,600 ha            | 10,700 ha    |

### Agricultural planning

Agricultural planning of cropping pattern, farming operation, etc. has been made in consideration of topography, soil conditions and the present farming practices in the respective scheme areas.

Main crop in the proposed cropping pattern is paddy. Double cropping of paddy is adopted to the low land paddy field with well-drainage condition and single cropping is contemplated for the area with the natural constraints of annual flooding. Ground nuts and green manure are adopted as intercrops in the lowland paddy field. In view of labour shortage and of maintaining and improvement of soil fertility the introduction of drought animals is intended.

However, it is considered that double cropping of paddy in Belitang area is actually adopted.

### Water requirement and river flow

When the Belitang extension area is developed, the natural stream flow of the Komering

river will insufficiently guarantee to supply the irrigation water required for the whole Belitang area during the dry season. Consequently in the dry season the water balance will meet as follows in each case A, B and C by adopting the 5 years return period statistically.

| Items                        | Case | A                             | B                             | C                             |
|------------------------------|------|-------------------------------|-------------------------------|-------------------------------|
| Acreage of Paddy Cultivation |      | 19,500 ha                     | 48,000 ha                     | 81,000 ha                     |
| Water required               |      | million m <sup>3</sup><br>230 | million m <sup>3</sup><br>565 | million m <sup>3</sup><br>960 |

Each amount of water required will be stored at proposed Ranau regulator in case A and besides proposed reservoir in case B & C without the use of natural river flow in dry season.

#### Hydropower potential

The said report also identified the hydro-power potential of the upper reach of the Komering river basin in combination with regulation of the irrigation water requirement.

#### (3) Belitang proper area

The Belitang proper area covers a gross area of about 30,000 ha where more than 20,000 ha is rather intensively cultivated and already fully settled by transmigrants.



In the area, paddy is predominantly grown on about 18,000 ha in the rainy season and about 1,000 ha of irrigated land in the dry season. Upland crops are grown but not so significant.

The project area is provided with irrigation facilities of main and secondary canals. Problems encountered are the insufficient tertiary and quaternary irrigation canal systems, and low intake capacity of the existing intake structure located at Kurungan Nyawa is under improvement and it is intended to complete the improvement by the end of 1979.

After completion of tertiary and quaternary canal system and establishment of institutional support service system, the year-round irrigation on the whole proper area will be assured.

#### 4.3 Lower Komering River Basin

The lower Komering river basin is flat and swamps are annually flooded. The paddy is cultivated in the limited area where the land dries up or stagnant water is evacuated during the dry season.

In the dry season, the lower Komering river basin near Kajuagung occurs in water shortage due mainly to discharging of the Komering river flow to the Ogan river.

In consideration of these situations of the lower basin the upper Komering river basin development is to be formulated.

#### 4.4 Way Kanan Area

The irrigation development of the area of 33,000 ha located on the left bank of the Kanan river, which is one of the big tributaries of the Tulangbawang area, has been studied by Province Office of Lampung. It is contemplated to divert the irrigation water required for the area from the Komering river.

The sufficient data necessary to make the detailed study is not available as yet. In overall planning of the Komering river water resources development, the definite plan shall be formulated based on the topographic, soil and land capacity surveys.

#### 4.5 Recommendation

##### (1) Overall planning

In consideration of the development effect of the Upper Komering river basin to the lower basin, and for the sake of making the definite plan of the diversion of the Komering river flow to the Way Kanan Area in Lampung Province, the overall planning on the Komering river water resources development including hydropower development will be needed.

(2) Feasibility study

From a point of view of irrigation area and mapping, following cases are considered.

|                                 |           | AREA (F/S) |     |     |
|---------------------------------|-----------|------------|-----|-----|
|                                 |           | A          | B   | C   |
| M<br>A<br>P<br>P<br>I<br>N<br>G | I         | G          | N.G | N.G |
|                                 | II        | G          | G   | N.G |
|                                 | III = A.I | G          | G   | N.G |

- ∴ G; Good, able to implement  
N.G; No good, not able to implement  
=; Same work

Case C : It takes longer period in F/S, the scale of work and the period of construction are very extended.

Case B : No maps are available in the catchment area of the dam

After the discussion between authority concern in Indonesia and the mission, Case II is concluded.

(3) Mapping

In making overall development planning, the maps of 1/50,000 being available at present will be sufficient.

As for the feasibility study, maps of scale 1/10,000 or 1/5,000 is necessary. The following alternatives are conceived in respect of the difference of surface features between the present and the photo, clearness of the photographs, etc.

Case I : - Aerial photo mapping of scale 1/10,000 by use of photographs scaled 1/50,000.

Case II : - Taking aerial photographs over the areas on which the feasibility study will be made.

- Aerial photo mapping of scale 1/5,000.

Case III : - Taking aerial photographs for the area on which the photograph 1/50,000 is lack and Aerial photo mapping for this area.

- Aerial photo mapping of scale 1/10,000 for other area by use of available photos.

## **5. DATA COLLECTED**

During the field survey, the following data necessary for making the feasibility study in depth were confirmed to be available and some of them were collected.

- Data on aerial photo mapping
- Data on hydrology, climate
- Structural conditions
- Data required for analysing cropping patterns
- Data on soil conditions
- Data on transmigration programme

**Attachment 4**

**1st Meeting**

**Date : November 28, 1978**

**Time : 9.00 - 11.30**

**Attendants**

**Indonesia**

**Amir Muryadi**

**CH. Nasri**

**Supriyo Triwiyono**

**Yusuf Kardi**

**C.P. Expert**

**Dr. Arata Masumoto**

**Kiyoshi Yamashita**

**Japan**

**Hoboru Katsumata**

**Tooru Mase**

**Yasumi Yamaguchi**

**Sataro Yazana**

**Embassy of Japan**

**Tadahiko Nakao**

**Jica Jakarta Office**

**Tadashi Shinoura**

## 2nd Meeting

Date : Tuesday December 12, 1978

Time : 9.30 - 12.30

### Attendants

#### Indonesia

Amir Muryadi  
Aziz Bocking  
Hasan Basri  
Hasan Ruh  
Praptodi Mulyo  
Ch. Nasri  
Hari Susanto  
Yusuf Kardi  
Hilal Badri  
Supriyo Triwiyono  
Paridjo  
Ocran  
C.P. Expert  
Kiyoshi Yamashita  
A. Noda

#### Japan

Noboru Katsumata  
Tooru Mase  
Yasumi Yamaguchi  
Sataro Yazawa  
Embassy of Japan  
Tadahiko Nakao

**3rd Meeting**

**Date : Friday December 15, 1978**

**Time : 9.00 - 12.00**

**Attendants**

**Indonesia**

**Mardjono Notodihardjo**

**Soesanto Soedibyo**

**Amir Muryadi**

**Proptodi Mulyo**

**Yusuf Kardi**

**Sukarno Hahab**

**Yaya Suyana**

**Hasan Basri**

**Fritz Hutasoit**

**CH. Hasri**

**Supriyo Triwiyono**

**Paridjo**

**C.P Expert**

**Kiyoshi Yamashita**

**A. Noda**

**Japan**

**Noboru Katsumata**

**Tooru Mase**

**Yasumi Yamaguchi**

**Sataro Yazawa**

**Embassy of Japan**

**Tadahiko Nakao**

**JICA, Jakarta Office**

**Tadashi Shinoura**



**4th Meeting**

**Date** : Monday December 18, 1978

**Time** : 9.00 - 15.00

**Attendants**

**Indonesia**

Mardjono Notodihardjo

Amir Muryadi

Aziz Bocking

Fritz Hutasoit

Yaya Suyana

Sukarno Hahab

Praptodi Hulyo

Pronoto

Supriyo

Paridjo

**C.P Expert**

Kiyoshi Yamashita

A. Roda

**Japan**

Hoboru Katsumata

Tooru Mase

Sataro Yazawa

**Embassy of Japan**

Tadahiko Nakao

JICA, Jakarta Office

Tadashi Shinoura

**5th Meeting**

**Date** : Tuesday December 19, 1978

**Time** : 8.30 .- 10.30

**Attendants**

**Indonesia**

**Mardjono Notodihardjo**

**Amir Puryadi**

**Priyo Triwiyono**

**Paridjo**

**Sukarnowahab**

**Aziz Bocking**

**Japan**

**Noboru Katsumata**

**Tooru Mase**

**Sataro Yazawa**

**Jica Jakarta Office**

**Tadashi Shinoura**

**THE CONTACT MISSION  
FOR THE UPPER KOMERING RIVER BASIN AGRICULTURAL DEVELOPMENT PROJECT  
IN THE REPUBLIC OF INDONESIA**

| ASSIGNMENT                 | NAME                 | PRESENT POSITION   |
|----------------------------|----------------------|--|
| Leader                     | Mr. Noboru KATSUMATA | Deputy Director,<br>Constuction Department,<br>TOHOKU Regional Agricultural Administra-<br>tion Office,<br>Ministry of Agriculture, Forestry & Fisheries               |
| Irrigation &<br>Drainage   | Mr. Tooru MASE       | Specialist of Irrigation & Drainage,<br>Agricultural Design Devison,<br>Agriculture & Fisheries Department,<br>HOKKAIDO Development Bureau,<br>Prime Minister's Office |
| Cooperation &<br>Planning  | Mr. Yasumi YAMAGUCHI | Senior Official,<br>International Cooperation Division,<br>Economic Affairs Bureau,<br>Ministry of Agriculture, Forestry & Fisheries                                   |
| Agronomy &<br>Coordination | Mr. Sataro YAZAWA    | Senior Instructor,<br>UCHIHARA International Agriculture Train-<br>ing Center,<br>Japan International Cooperation Agency   |

**JAPAN INTERNATIONAL COOPERATION AGENCY (JICA)**

P.O. Box 216, Mitsui Bldg., 1, 2-chome, Nishishinjuku, Shinjuku-ku, Tokyo, Japan, 160



1. The first part of the document discusses the importance of maintaining accurate records of all transactions and activities. It emphasizes that proper record-keeping is essential for transparency and accountability, particularly in the context of public administration and government operations. The text notes that without reliable records, it becomes difficult to track expenditures, assess performance, and ensure that resources are being used effectively.

2. The second part of the document addresses the challenges associated with data collection and analysis. It highlights that gathering accurate and timely data is often a complex task, especially when dealing with large-scale operations or multiple stakeholders. The text suggests that investing in robust data management systems and training personnel can significantly improve the quality and reliability of the information collected.

3. The third part of the document focuses on the role of technology in modernizing administrative processes. It argues that leveraging digital tools and platforms can streamline workflows, reduce errors, and enhance communication between different departments. The text also mentions the importance of ensuring that these technologies are secure and accessible to all relevant parties.

4. The fourth part of the document discusses the need for continuous improvement and innovation. It states that organizations should regularly evaluate their current practices and seek out new, more efficient ways of doing things. This involves fostering a culture of learning and experimentation, where employees are encouraged to share ideas and take ownership of their work.

5. The fifth part of the document concludes by emphasizing the importance of collaboration and teamwork. It notes that achieving organizational goals often requires the coordinated efforts of multiple individuals and departments. The text encourages leaders to promote open communication and mutual support, creating an environment where everyone can contribute their best work.

資料⑩-2

Provisional Itinerary

- Nov. 26 - Arrive in Jakarta (CX 501)  
27  
28 - Discussion with official concerned in Jakarta  
29 - Move to Palembang (GA 102)  
30 - Discussion in Palembang
- Dec. 1 - Move to Martapura  
2  
. - Field Reconnaissance  
. .  
7  
8 - Move to Palembang  
9 - Discussion  
11 - Move to Jakarta (GA 153)  
12 - Discussion in Jakarta  
13 - Move to Bandune  
14 - Move to Jakarta  
15  
. - Discussion on S/W  
18  
19 - Spare day  
20 - Leave for Tokyo (CX 710)

(Mr. Yamaguchi)

- Dec. 4 - Move to Kotabumi  
5 - Move to Telukbetung  
Discussion with DPU Lampung  
6 - Move to Bandune (GA 261)  
7 - Move to Jakarta  
8 - Mr. Yamaguchi will join the advisory team  
of the Riam Kanan Irrigation Project.

1. The first part of the document discusses the importance of maintaining accurate records of all transactions and activities. It emphasizes that proper record-keeping is essential for transparency and accountability, particularly in the context of public administration or corporate governance. The text suggests that without reliable records, it becomes difficult to track progress, identify issues, and ensure that resources are being used effectively.

2. The second part of the document addresses the challenges associated with data collection and analysis. It notes that while modern technology offers powerful tools for gathering and processing information, the quality and consistency of the data can vary significantly. The author highlights the need for standardized protocols and rigorous quality control measures to ensure that the data being used is accurate and relevant to the task at hand.

3. The third part of the document focuses on the importance of communication and collaboration. It argues that successful outcomes often depend on the ability of different teams and individuals to share information, coordinate efforts, and solve problems together. The text encourages the use of clear communication channels and regular meetings to foster a collaborative environment where everyone's input is valued.

4. The fourth part of the document discusses the role of leadership in driving organizational success. It suggests that effective leaders should be able to set a clear vision, inspire their teams, and make strategic decisions that align with the organization's goals. The text also emphasizes the importance of leading by example and being open to feedback, as these qualities are crucial for building trust and motivating others.

5. The fifth part of the document touches upon the importance of continuous learning and improvement. It notes that in a rapidly changing world, organizations must be willing to adapt and learn from their experiences. The text encourages a culture of innovation and experimentation, where mistakes are seen as opportunities for growth and learning rather than failures.

6. The sixth part of the document discusses the importance of ethical considerations in decision-making. It suggests that organizations should always act with integrity and fairness, even when it is difficult or costly. The text emphasizes that ethical behavior is not only the right thing to do but also a key factor in building a strong reputation and long-term success.

7. The seventh part of the document addresses the importance of risk management. It suggests that organizations should proactively identify potential risks and develop strategies to mitigate them. The text notes that while it is impossible to eliminate all risks, a thoughtful and systematic approach can help to minimize their impact and ensure the organization's resilience.

8. The eighth part of the document discusses the importance of customer or stakeholder focus. It suggests that organizations should always keep their customers or stakeholders at the center of their operations. The text emphasizes that understanding their needs, preferences, and expectations is essential for providing high-quality products or services and for building strong, lasting relationships.

9. The ninth part of the document touches upon the importance of financial management. It suggests that organizations should carefully monitor their financial performance and ensure that they are using their resources wisely. The text notes that sound financial management is essential for long-term sustainability and growth.

10. The tenth part of the document discusses the importance of maintaining a positive organizational culture. It suggests that a strong, positive culture can be a significant competitive advantage for an organization. The text emphasizes the role of leadership in shaping and maintaining this culture, and the importance of recognizing and rewarding positive behaviors.

TERMS OF REFERENCE OF  
THE CONTACT MISSION FOR  
UPPER KOMERING RIVER BASIN AGRICULTURAL DEVELOPMENT PROJECT

In response to the request of the Government of the Republic of Indonesia, the Government of Japan has decided to provide the technical services for the Feasibility Study on The Upper Komering River Basin Agricultural Development Project as part of the technical cooperation program of the Government of Japan, in close cooperation with the Indonesian Authorities concerned, i.e. the Directorate General of Water Resources Development, Ministry of Public Works.

Prior to the feasibility study, the Contact Mission will carry out the preliminary survey during the period for the sake of efficient implementation of the feasibility study through the field survey, collecting data, and a series of discussions with officials concerned, as follows :

- (1) to confirm the proposed benefited area of the project,
- (2) to make reconnaissance survey on the project, e.g. water-use, cropping pattern, irrigation facilities,
- (3) to formulate the tentative schedule for the feasibility study,
- (4) to discuss and prepare the Scope of Works for the feasibility study.

A tentative schedule is attached.

1. The first part of the document discusses the importance of maintaining accurate records of all transactions and activities. It emphasizes that proper record-keeping is essential for transparency and accountability, particularly in the context of public administration and financial management. The text highlights that records should be kept in a clear, organized, and accessible manner, ensuring that they can be easily reviewed and audited.

2. The second part of the document focuses on the role of internal controls and risk management. It states that these mechanisms are crucial for preventing fraud, errors, and mismanagement of resources. The text suggests that organizations should implement robust internal control systems that cover all aspects of their operations, from procurement to payroll. Additionally, it stresses the importance of regular risk assessments to identify potential vulnerabilities and take proactive measures to mitigate them.

3. The third part of the document addresses the need for continuous improvement and learning. It argues that organizations should not be satisfied with the status quo but should actively seek ways to enhance their performance and efficiency. This involves fostering a culture of innovation and learning, where employees are encouraged to share their ideas and experiences. The text also mentions the importance of staying updated on the latest trends and best practices in the industry to remain competitive and effective.

4. The fourth part of the document discusses the importance of communication and collaboration. It states that effective communication is key to ensuring that all stakeholders are aligned and working towards common goals. The text suggests that organizations should establish clear lines of communication and encourage open dialogue between different departments and levels of the organization. Collaboration is also emphasized as a means to leverage the strengths of different teams and individuals, leading to better overall performance.

5. The fifth part of the document concludes by summarizing the key points discussed and reiterating the importance of the discussed topics. It emphasizes that the implementation of these principles is not a one-time task but a continuous process that requires ongoing attention and effort. The text ends with a call to action, encouraging all stakeholders to take responsibility for their roles and contribute to the overall success and integrity of the organization.



資料④-4.1 資料要求リスト

Check List for Water Balance

| Classification                                | Item                                   | Remarks  | Note         |
|---|--|--|--------------|
| from meteorological view point                | monthly rainfall record                | in each area   |              |
|   | daily rainfall record                  | -do-   |              |
|   | its intensity                          | -do-   |              |
| from hydrological view point                  | runoff coefficient                     | in each step area and gradual area                       |              |
|   | loss ratio, conveyance and field       | -do-   |              |
|   | water re-use ratio                     | -do-   |              |
|   | evaporation ratio                      | in each covered area and uncovered area in each rainfall |              |
|   | effective rainfall                     |  |              |
|   | present condition of water re-use      | proper area  |              |
|   | water discharge                        | in each area   |              |
| from physiological water necessity view point | evapotranspiration value or ET/E ratio | in each season and per yield                             |              |
| from soil physical view point                 | percolation value                      | in each steep area and gradual area                      |              |
|   | ground water level                     | -do-   |              |
|   | permeability                           | -do-   |              |
|   | soil classification                    | in each area   |              |
|   | preparation period                     | in each variety  | 第 21 表       |
|   | from sowing to transplanting period    | -do-   | 1            |
| from cultivation schedule view point          | from transplanting to harvest period   | -do-   | 第 28 表<br>参照 |
|   |  |  |              |
| from topographical view point                 | land gradient                          | in each area   |              |
| from mapping view point                       | scale of aerial photo                  | in each area   |              |
|   | year pictured                          | -do-   |              |
|   | availability of film                   | -do-   |              |
|   | numbers of film                        | -do-   |              |
|   | scale of map, if any                   | -do-   |              |

| Classification                               | Item  | Remarks                                       | Note                              |
|--|---|---|-----------------------------------|
| from geological and soil sounding view point | <ul style="list-style-type: none"> <li>. kinds</li> <li>. numbers</li> <li>. year performed</li> </ul>  | in each area or site<br>-do-<br>-do-          |                                   |
| from water use for other purposes view point | <ul style="list-style-type: none"> <li>. river maintenance</li> <li>. fishery</li> <li>. ship traffic</li> <li>. agriculture in down stream area</li> </ul> | in each range<br>-do-<br>-do-<br>-do-<br>-do- | flashing water for Kaynagung area |

Data required by the mission if available here

1. Temperature and Precipitation records in the Project area  
Max. temp. Min. temp. Monthly Precip.
2. Latest land utilization table or map
3. Latest planting area & Production of major crop in the project area
4. Present cropping pattern in
  - 1 swamp area
  - 2 rainfull paddy field area
  - 3 upland area
  - 4 irrigated field
5. Yield of rice, Paddy rice in various area
6. Consumption of fertilizers and agro-chemicals in Palembang or South Sumatera
7. Numbers of machineries purchased by farmers in S. Sumatera
8. Present dialog of extension system
9. Prices of local goods and products
10. Soil analysis
11. Agricultural population in the Project area
12. Scheme of transmigration from Java
13. Program of 2nd 5 years Development Plan in South Sumatera

## 2. 収集資料リスト

### 2-1 農業資料

- (1) Belitang Extension Area Agricultural Development Project, Reconnaissance Planning Report. Report prepared for the Food and Agriculture Organization of the United Nations by Nippon Koei Co., Ltd. 1974.
- (2) Soil Survey of the Transmigration Project Area BATURAJA-MARTAPURA (South Sumatera), Ministry of Agriculture, Directorate General of Food Crops, Soil Research Institute, Bogor. 13/1975.
- (3) Land and Water Resources Development in Southeast Sumatera, AGRONOMY by Dr. R.D. VERMA, Agronomist United Nations Development Programme, Food and Agriculture Organization of the United Nations, Palembang, June 1975
- (4) Statistik Indonesia, Statistical Yearbook of Indonesia 1975
- (5) Soil Analysis in Martapura & Baturaja by Soil Research Institute, Bogor.
- (6) BRIEFING MEMORANDUM 1978  
Ministry of Public Works

## 2-2. かんがい資料

- ① 水文気象観測所配置図(南スマトラ州のみ)
- ② "The Report on Rainfall at South Sumatera" (1963~1974年の月別降雨量集計データ)
- ③ 南スマトラ州月別降雨量集計データ(1975)
- ④ " 日雨量集計表(1977, 78)
- ⑤ " 日気象データ(日雨量, 蒸発量, 温度, 湿度, 日照時間, 日射量, 風速)  
(1971~78)
- ⑥ " 水系別, 期別流量(1971~1978)
- ⑦ " 作目別作付模式図
- ⑧ 雨量計チャート紙複写(サンプル, ブリクソ 1977)
- ⑨ B.P.P.作付実績図(1976/77, 1977/78)
- ⑩ " ブロック別施設, 面積内訳図
- ⑪ " および B.E.P用水施設計画一般図
- ⑫ クルンガンニャウ取水地点河道等高線平面図
- ⑬ " 取水工改修平面図
- ⑭ B.P.P.分水工構造図(サンプル)
- ⑮ " 分水工平面図( )
- ⑯ " Hydrometeorological Analysis and Evaluation " by Dr. Medardo, 1974
- ⑰ " Annex for the Report of B.E.P." 日本工営, 1974
- ⑱ " Menggala Irrigation Scheme " by Mr. Dusan, 1975
- ⑲ " Munchakkaban Irrigation Scheme Scheme " by Mr. Dusan, 1975
- ⑳ " Way Umpu and Way Pengubuan Irrigation Paoject " by P.T. Indah Karya, 1978

## 2-3. 地形地質関係資料

- ① 航測および図化(5万分の1)範囲配置図(南東スマトラ全域)
- ② 5万分の1 一般図(関係全域)
- ③ 5万分の1 地形図(B.E.Pのみ)
- ④ 20万分の1 土地利用図(関係全域)
- ⑤ 20万分の1 地質図( )
- ⑥ 5万分の1 航測写真ゼロックス複写(サンプル)
- ⑦ " Geology of Indonesia " の内, スマトラ編 by Ministry of Public Works and Power
- ⑧ 75万分の1 地質図(スマトラ島南部)



## 資料③ 関係機関打合せ資料

### ③-1. インドネシア国公共事業省水資源総局調査前打ち合せ事項

日 時 ; 11月28日 9時~12時

場 所 ; 計画部会議室

参加者 ; 本文中I, 7参照

#### 1. 調査団日程について

12月1日は国家祝日、12月2日は公共事業省設立記念日、12月3~5日はかんがい技術者会議となっており、カウンターパートの都合に問題を残しつつも当方提案(資料②)のとおり決定した。

カウンターパートは土木技術者2名、11月29日より、農業技術者1名、11月30日より調査を支援する。

#### 2. 開発地域のイ国側の考え方

① コメリン川上流地域(Upper Komeling River Basin)(B.T.A. 73)とは自然流下かんがい(Gravity Irrigation)の対象となる地域全域を指し、下流コメリン(Lower Komeling)(B.T.A. 74)とはそれ以外の沼沢地(Swamp Area)を指すと考えている。

② 水収支(Water Balance)計画の対象地域はコメリン川全域を考える必要がある。

(理由)

a. 流域全体の水収支を把握する必要がある。

b. コメリン川からオーガン川に流入する雨期の水量を貯溜し農業用水およびその他目的用水とする。

c. 乾季には、コメリン川下流のカユクグン(Kajuagung)地域が異常温水となり、諸疾病の発生が著しく、これを防止する必要がある。

③ F/S対象の地区は調査団で案を作らねたい。

④ ランボン地区(本プロジェクトエリアのうちランボン州にかかる部分)はコメリン川上流域に含まれている。

⑤ 開発計画(Prec F/S, F/S, D/D)にはB.A.A.の水利施設と水収支を含めて検討する必要がある。

#### 3. 航空測量写真撮影および図化について

① 1/50,000地形図の図化範囲は別紙(添付図3-1-1)のとおりである。既存の写真撮影は1969年~1972年に実施され、スケールは、1/50,000である。

② フィルムの保存状況および写真の写り具合は良好である。ただしいく枚かのクラウドエリア(Cloud Area)がある。

③ ただし距離実測用の地上標定点がなく、かつ現在の地貌(部落および道路、林地)が可成

り変化しD/Dには不適である。

- ④ イ国ではF/Sは1/10,000と考えている。
- ⑤ ③の状況をもて、新規撮影が必要か否かは調査団で判定されたい。
- ⑥ ネガフィルムは空軍が保管している。ポジ写真はバレンバンの公共事業部で提示する。

#### 4. コメリソ川上流地域の入植計画について

コメリソ川上流地域の入植計画は、野田専門家が報告する。入植年次計画等詳細資料はバレンバン公共事業部で説明できる。入植計画は本開発計画の進め方と密接な関係がある。

#### 5. 栽培作物計画について

栽培作物は米主体と考えているが、水収支の結果では他の作物(とうもろこし、キャッサバ(Cassava etc))を勧奨して欲しい。かつ経済的に最も適しているものを選定する必要がある。

#### 6. その他

- ① ②~⑤は調査団の質問に応じイ国側(増本顧問を含む)が発言したものである。
- ② 現地報告書は、現地調査および資料収集並びに必要な討議の終了後必要に応じ覚書と合せて残す考えである。
- ③ 現地調査後の打ち合せは12月12日とする。
- ④ 12月12日は水資源総局が司会し、かんがい局、沼沢局、その他関係局が出席する予定である。

#### ③-2. バレンバン公共事業部調査前打ち合せ

日時 ; 11月30日 9時~14時

場所 ; 部長室

参加者 ; 本文中I.7参照

##### 1. イ国側の考え方および要請

- ① コメリソ川下流域のカユアグン地域では、乾季にコメリソ川からオーガン川に河川水が流入しているため水位低下を来し水質汚染が甚だしく諸疾病が発生しかつ作物の収穫が少ない。
- ② 下流域の開発計画調査を強く要請する。
- ③ S.A.P.では、遊水池(Natural Reservoir)としての機能があり、計画上考慮する必要がある。従って雨季の大量の水の処理または防弊と用水貯溜の両者の調整がキーポイントである。
- ④ S.A.P.地域は、青年層が出稼ぎするため老人と子供が多く、機械化や経営規模の拡大が困難で開発の進捗上問題とならう。
- ⑤ コメリソ川の上下流の区分けは、O.K.I.県、O.K.U.県の境界である。



- ⑥ 最近スマトラ島では雨季乾季がはっきりせず、S.A.P.地域収穫期の乾季の終りに雨が降り収穫が著く減少する。
- ⑦ コメリン川上下流域を一つのプロジェクトとしてかつ一国一チームでF/Sを実施された。
- ⑧ ジープを早急に持ち込まれたい。

## 2. BAPEDA 打ち合せ(イ側意見)

今までS.A.P.について地元の強い要望を各方面に伝えているが、未だに開発に着手されていない。それは地域が広大で規模(水量・事業量)が大きく、かつ総合的な取り組みが必要でありながらその実現が困難であるためと考えている。F.A.Oは段階的开发を推せんしているが、しかし上流域重点主義で、移民が増え下流域に悪影響を生じてはならない。したがって、下流域を取り組んだ総合的开发に早急に取り組んでいただきたい。

### ③-3. バレンバン公共事業部に現地調査報告

日 時 ; 12月11日 10時~11時

場 所 ; 部長室

参加者 ; 本文中1.7参照

閉長より口頭報告

#### 1. 調査協力謝礼

2. F/Sの進め方については、最大を81,000 haとし、48,000案、19,500 ha案を検討している。円化の方法でもF/Sが異なるので、イ国のフィルムが使用できる場合、できない場合で検討をしている。ジャカルタで決論を出す。

3. S.A.P.地域については、水収支計画の中で検討することになろう。

インドネシア側より謝辞があり、ジャカルタの水資源総局の打ち合せには担当官を派遣する旨発言があり、S.A.P.地域について早急に開発計画調査に着手するよう要請が行われた。

### ③-4. 水資源総局に対する現地報告

日 時 ; 12月12日 9時~13時

場 所 ; かんがい局会議室

出席者 ; 本文中7.1参照

1. 団長の調査協力謝辞
2. 調査結果報告(資料①-3中の経過報告)
3. F/Sの進め方について討議

#### ① 調査団の意見

対象地区をケースA 19,500, ケースB 48,000, ケースC 81,000 haの3案とし, 航空写真および図化方法として, ケースI ; イ国写真のみで $1/10,000$  図化する, ケースII ; F/Sに先立って必要面積全部撮影し直す, III ; イ国写真を使える部分は使い不足分を撮影図化するの3案とし, 考えられる9案中A-I, II, B-II, IIIについて検討を加えた。

特に, 検討を行い結論を導き出す鍵として, ①イ国のフィルムが使えるか否か, また国外に持ち出し可能か否かを決めること②計画地区の栽培作物は調査の結果では水稲二期単作がよいと判断されるが, FAO報告は乾期の半分程度の面積は畑作としている計画であり, いずれにするかイ国が決定する必要がある。

#### ② イ国側の意見

- a. S.A.P. をF/Sに入れるよう要請する。
- b. ムンチャカパウ地区は, FAO報告でF/Sの精度となっているのではないか?  
( $1/10,000$  地形図がなくOECFの審査をパスしなかったと回答)
- c. コメリン川全域の水収支を考えるべきである。
- d. ラナク湖利用の場合, ラナク湖直下流にかんがい計画があり, Panfau Nipsi地区(700 ha)という。この水利用計画を無視できない。
- e. 19,500 ha は乾季水田面積か?(回答; 乾季として用水計画を検討した。)
- f. ガジャマダ大学でS.A.の研究をしているので, 報告書を提供するから, S.A.P.について積極的に取り組むよう要請する。

③-5. 水資源総局打ち合せ

( F / S の進め方について )

日 時 ; 12月15日 9時~12時

場 所 ; かんがい局会議室

出席者 ; 1-6参照

1. 現地報告書の提出(資料①-3)

2. Case A.B.C × Case I II IIIの説明

3. 4国側提案

① F/Sの考え方を次のとおりとする。

I マスタープランをU.K.P., S.A.P.(但し水収支のみ)について樹立する。

II F/SはCase A-II(19,500 ha)および

III S.A.P.中の10,000 haとする。ただし10,000 haはS.A.中の代表的な箇所とする。

② 下流部で継続中の開発事業(Ogan-Karamasa I-II-III)に対する水収支の影響を検討されたい。

③ マスタープランはPre F/Sとは異なるもので、FAO報告にさらに詳細な検討を加えた程度と考える。その調査名は、

Study of Ogan-Komering Water Resource Development Plan

とした。

④ Pre F/Sは19,500ha 以外のU.P.K.とする。

⑤ 作物栽培計画は、B.E.P.について全面積格作でよいと考える。

⑥ 維持流量の考え方はコタブミの例(42 ton中8 ton)を参考とされたい。

⑦ Pre F/Sには Priority をつけられたい。

4. 調査団の意見(合意事項)

① コメリン川流域で関係する地区の総合的な水収支計画は必要であることは認める。Study of Ogan-Komering W.R.D.P. についてその扱いを調査団に任せる。

② F/SはB.E.P.の19,500 haとする。

③ 残のB.E.P.およびT.A., 発電およびダムはPre F/Sとする

④ 図化は4国側のフィルムを使用しない(新規にF/Sに先立って航空写真撮影をする)

⑤ 作物栽培計画は、B.E.P.19,500 haについては格作二期全面積とするが、残部のB.E.P.についてはF/Sで検討する。

⑥ カユアグンの用排水問題の緊急性と重要性はF/Sチームに伝える。

⑦ 維持流量については検討する。

⑤-6. 水資源総局打ち合せ

( S/W Minutes, Finding Report の検討 )

日 時 ; 12月18日 9時30~15時

場 所 ; 計画部会議室

出席者 ; 本文中7.1参照

(1) S/Wについて

- ① コメリン川水収支については、インドネシア側は、土地開発も含めよとの意見であったが Comprehensive Study on Water resources Development とすることで合意した。
- ② イ国の河川開発には生活用水確保が義務付けられているので、その項目を調査項目に加えるよう要望があったが、項目末に「その他必要な事項として扱うこと」で合意した。
- ③ F/Sのスケジュールについては、イ国側は2年目にF/Sの完了を要求しその方向で検討し直すこととした。
- ④ F/S, Pre F/S の内業は極力現地で、カウンターパートも加って行えるようイ国側から希望が出された。または東京に連れていき協同作業により研修ができるよう要望があった。
- ⑤ シープ12台、ボート2台、ボーリング機械についてはイ国で用意できないので、アレンジする留めたい旨要望があり、東京(外務省およびJICA)と協議することとした。
- ⑥ F/S, Pre F/S, 航測調査団が持ち込む器材については、免税措置をとるので、2月上旬までに概略リストを、発送し1ヶ月前に詳細リストを大使館を通じ提出することで合意。
- ⑦ 調査団の免責条項はインドネシア側で検討する。

(2) Minutesについて

S/Wの⑥の持ち込み機械の件を1項目追加することとした。

(3) Finding Report について

最終案として、若干の字句訂正をし合意した。

## 参 考 资 料





REPUBLIC OF INDONESIA

# BRIEFING MEMORANDUM 1978



MINISTRY OF PUBLIC WORKS

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- 5.1. Policy
- 5.2. Program and Implementation.

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##### 1. Housing, Building, Planning and Urban Development Sector

- 1.1. Policy
- 1.2. Program and Implementation.

##### 2. Highway Sector

- 2.1. Policy
- 2.2. Program and Implementation.

##### 3. Water Resources Development Sector

- 3.1. Policy
- 3.2. Program and Implementation.

##### 4. Electric Power Sector

- 4.1. Policy
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##### 5. Gas Power Sector

- 5.1. Policy
- 5.2. Program and Implementation.

#### V. General Policy of REPELITA III

1. Basic Strategy
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Appendices : I - VI.



## Preface

This memorandum has been prepared to provide a background information on the main tasks and activities of the Ministry of Public Works and Power, and particularly its policies and programs in the First and Second Five Year Development Plan ( REPELITA I & II ).

It explains briefly the mission of the Ministry, the problems it has to face, what general policies have been adopted and the progress that has been achieved within the scope and field of the Ministry's program during the Five Year Development Plans.

Until the fourth year of Repelita II, i.e. 1977/1978, both Electric Power Sector and Gas Power Sector were still the responsibility of the Ministry and starting from March 1978 on those sectors are undertaken by the Ministry of Mining and Energy.

We hope that this memorandum will serve as useful reference.

Jakarta, July 1978.

## I. Introduction.

1. The main task of the Ministry of Public Works and Power is to formulate and to implement the policy, planning, programming and budgeting for the rehabilitation and development of physical infrastructure in the public works and power sector in order to enhance the activities of promoting the people's welfare.
2. In the First Five Year Development Plan ( REPELITA I ) the Ministry of Public Works and Power had the responsibility to rehabilitate and to improve the existing infrastructure to enable it to attain its optimal functioning to support development implementation in other sectors among others agriculture, transportation, trade, and industry. Such activities were followed by upgrading and new construction works in the limited scale which is continued within the REPELITA II.
3. The improvement of the general condition of the infrastructure, e.g., highway network, irrigation network, power supply etc., is expected to support the increase of GNP with 7% per annum during REPELITA II as a target. The results of such implementation will lead to new demands which need intensification of further development efforts and will change the nature of the development activities to the new construction ones. Accordingly, it is expected to bring about increase of the activities and volume of works in the public works and power sector with approximately 25% per annum during REPELITA II.
4. The project approach employed during REPELITA I seemed to be inappropriate, therefore a more comprehensive program approach is being employed during REPELITA II. Besides, regional aspects are also taken into account in planning and implementation of infrastructure development to achieve the equal distribution of development among the regions.  
To reach the above-stated objectives, activities in the public works and power sector can be grouped in three main programs :
  - 4.1. Main program for development activities.
  - 4.2. Main program for management consolidation.
  - 4.3. Main program for regulation improvement.
5. To implement successfully those programs of development, qualified manpower is a prerequisite, therefore in-service training is considered important.

## II. General Policy.

### 1. Policy of REPELITA I.

The general policy of the Ministry of Public Works and Power during the REPELITA I is mainly emphasized on the activities of maintenance, rehabilitation, and upgrading of the existing physical infrastructure which are economically significant. The activity was conducted to prevent those physical infrastructure from deterioration and enable them to function at the maximum extent in order to support the attainment of the target of the Government in various aspects of development :

- 1.1. Increasing of food production especially rice.
- 1.2. Creating employment and encouraging transmigrant settlement at the greatest possible scale.
- 1.3. Setting up basis for social improvement.
- 1.4. Establishing and maintaining firm physical development order.
- 1.5. Supporting and encouraging industrial development by developing electric as well as gas power sector.

The above-mentioned policy is based on the consideration that at least ten years or two Repelitas are needed to rehabilitate the physical infrastructure network.

## 2. Policy of REPELITA II.

In the Second Five Year Development Plan ( REPELITA II ), the outlined target of the Ministry of Public Works and Power is to continue the activities that was started in the First Five Year Development Plan ( REPELITA I ) and to undertake the intensification, up-grading, and development of new infrastructures, which have been aimed to increase food production, to support the development of transportation infrastructure, to increase the establishment and construction of housing, city and regional planning, to enhance the undertaking of electric and gas power projects to support economic development and create centres of employment activities in greatest possible number.

## III. Program and Implementation of REPELITA I.

### 1. Housing, Building, Planning, and Urban Development Sector.

#### 1.1. Policy.

During REPELITA I the nature of activity programmed by the Directorate General of Housing, Building, Planning and Urban Development ( Cipta Karya ) is mainly software, i.e. studies and designs. Due to the limitation of the budget and considering that the nature of the general objectives of Cipta Karya is mainly social, physical development in the field of Cipta Karya was also limited.

#### 1.2. Program and Implementation.

##### 1.2.1. Program.

The development program covers four programs consisting of :

- 1.2.1.1. Program of City and Regional planning.
- 1.2.1.2. Program of guidance and counselling for Urban and Rural Housing.
- 1.2.1.3. Program of Improvement Water Supply system.
- 1.2.1.4. Program of Sanitation Improvement.

1.2.2. Implementation.

- 1.2.2.1. City and Regional Planning which absorbed budget ± Rp. 609,000,000.-
- 1.2.2.2. Urban and Rural Housing Improvement : 1,375 units.
- 1.2.2.3. Increasing Water Supply becoming 6,222.5 litre/second.
- 1.2.2.4. Sanitation Improvement which absorbed budget ± Rp. 281,472,000.-.

2. Highway Sector :

2.1. Policy.

In REPELITA I highway ( road and bridge ) development program started with program of highway ( road and bridge ) rehabilitation with the purpose to open isolated areas and support the development implementation of other sectors. It was continued with the program of upgrading of highway ( road and bridge ) and new construction although in a limited extent.

2.2. Program and Implementation.

2.2.1. Program.

The Development program covers five programs consisting of :

- 2.2.1.1. Program of road and bridge maintenance.
- 2.2.1.2. Program of road and bridge rehabilitation.
- 2.2.1.3. Program of road and bridge upgrading.
- 2.2.1.4. Program of road and bridge construction.
- 2.2.1.5. Program of Infrastructure Development for Transportation and Tourism.

2.2.2. Implementation.

- 2.2.2.1. Road.
  - 2.2.2.1.1. rehabilitation of 6,634.5 km.
  - 2.2.2.1.2. upgrading of 3,784.8 km.
  - 2.2.2.1.3. construction of 367.2 km.
  - 2.2.2.1.4. maintenance of 89,261 km. + 2,500 km./annually ( including bridge ).
- 2.2.2.2. Bridge.
  - 2.2.2.2.1. rehabilitation of 20,331 m.
  - 2.2.2.2.2. upgrading of 15,662.6 m.
  - 2.2.2.2.3. construction of 15,662.6 m.

2.2.2.3.3. Workshop.

- 2.2.2.3.1. Base workshop : 5.
- 2.2.2.3.2. Workshop : 29.
- 2.2.2.3.3. Laboratorium : 37.

3. Water Resources Development Sector.

3.1. Policy.

The Government emphasized that during REPELITA I efforts in water resources development should be aimed to rehabilitate as well as intensify irrigation network, drainage, river and flood control, swamp reclamation and river basin development for multipurpose projects with the objectives to enable further development of agriculture, especially to increase food production and to develop agricultural areas in order to solve the problems of the distribution of population, food and unemployment.

Accordingly, the planning of food producing areas should take into account consumer's locations.

The attainment of the objectives of the development programs in water resources is made possible by the support of the research institute, i.e. Institute of Hydraulic Engineering (D.P.M.A.).

3.2. Program and Implementation.

3.2.1. Program.

Activities in water resources development during REPELITA I can be grouped into the following programs :

3.2.1.1. Program of rehabilitation and improvement of irrigation.

3.2.1.2. Program of construction of new irrigation network.

3.2.1.3. Program of controlling and developing rivers and swamps.

3.2.1.4. Research program on agriculture and water resources development.

3.2.2. Implementation.

3.2.2.1. Rehabilitation and improvement of irrigation network supporting 957,834 Ha. rice field.

3.2.2.2. Extension of the irrigation networks supporting 177,246 Ha. rice field.

3.2.2.3. River training and safeguarding of 286,589 Ha. rice field.

3.2.2.4. Other water resources development, e.g., tidal irrigation projects, swamp reclamation and development, and polder projects, Brantas river multipurpose project supporting agricultural area extension of 134,622 Ha. and safeguarding of 65,000 Ha. production area.

#### 4. Electric Power Sector.

##### 4.1. Policy.

Activities are aimed at the development of new electric power station and extension of the existing station with its transmission and distribution network. Besides, improvement of PLN management, including its services to the public is also considered important. The development of new electric power stations carried out during REPELITA I is aimed at the increasing of installed capacity (KW) and balance situation between installed capacity and transmission and distribution network.

##### 4.2. Program and Implementation.

###### 4.2.1. Program.

Program of increasing of Electric Power covers several sub-programs :

- 4.2.1.1. construction of new electric power stations and rehabilitation of the existing electric power stations.
- 4.2.1.2. rehabilitation of transmission network.
- 4.2.1.3. construction./rehabilitation of sub-stations.
- 4.2.1.4. rehabilitation of distribution network.

###### 4.2.2. Implementation.

- 4.2.2.1. construction of new electric power stations and rehabilitation of the existing electric power stations : 306 MW.
- 4.2.2.2. rehabilitation of transmission network : 495.61 km.
- 4.2.2.3. construction./rehabilitation of sub-stations 21 units (415,25 MVA).
- 4.2.2.4. rehabilitation of distribution network :
  - Distribution Network :
    - a. Low Voltage : 1,481,75 km.
    - b. High Voltage : 1,619,31 km.
  - Transformer stations : 1,306 units.

#### 5. Gas Power Sector.

##### 5.1. Policy.

According to the budget available, development activities performed during REPELITA I were limited to the rehabilitations which would maintain equipment

be in function and avoid deterioration of equipment. However by the end of REPELITA I capacity of gas transmission is increased by the construction of Natural Gas Transmission Pilot Project (from Bongas to Cirebon) in cooperation with Pertamina (Oil State - Owned Company).

#### 5.2. Program and Implementation.

##### 5.2.1. Program.

Program of Increasing of Gas Power Supply Covers several sub-programs :

- 5.2.1.1. Increase of Gas Supply.
  - 5.2.1.2. Natural Gas Distribution.
  - 5.2.1.3. Rehabilitation of Gas Distribution Network.
  - 5.2.1.4. Rehabilitation of Gas meter.
- 5.2.2. Implementation.
- 5.2.2.1. Increase of Gas Supply up to 0.459 (109 kcal/day).
  - 5.2.2.2. Natural Gas Distribution up to 0.260 (109 kcal/day).
  - 5.2.2.3. Rehabilitation of Gas Distribution Network : 148.20 km.
  - 5.2.2.4. Replacement of Gas meter : 6,856 units.

#### IV. Program Implementation of REPELITA II.

##### 1. Housing, Building, Planning and Urban Development Sector.

###### 1.1. Policy.

In REPELITA II physical construction in this sector has been started as a logical sequence of the activities carried out in REPELITA I.

The housing construction covering urban as well as rural housing is given first priority, followed by physical rehabilitation and extension of water supply system which is not only limited in big cities but also in medium and small size towns, and urban sanitation system.

Priority is also being given to continue the efforts to carry out Urban and Regional Planning and research activities supporting the above-mentioned activities.

## 1.2. Program and Implementation.

### 1.2.1. Program.

Programs in this sector covers :

- 1.2.1.1. Program of City and Regional Planning.
- 1.2.1.2. Program of Urban and Rural Housing Development.
- 1.2.1.3. Program of Rehabilitation and Extensification of Water Supply and Urban Sanitation System.
- 1.2.1.4. Program of Research on Urban and Rural Housing and Water Supply System.

### 1.2.2. Implementation.

- 1.2.2.1. Regional Development Studies for Sumatra, Sulawesi and East Indonesia have been carried out including preparation of new resettlement (transmigration). Master Plan of some big cities and its development program have also been carried out.
- 1.2.2.2. In some urban areas the Government has been able to provide housing for the low-income people on installment basis. Site and services program is also launched during this period to overbridge between the need of housing and its availability. In the rural areas pilot project for housing rehabilitation has been developed and so is the introduction of the use of low-cost building material.
- 1.2.2.3. Program of attaining 29,000 litre/second as the target of water supply system development in Repelita has been started, and in some major cities the program has been completed. Urban sanitation studies for Jakarta, Semarang, Surabaya, Bandung, Medan, Yogyakarta, Surakarta, Madiun are now still underway.
- 1.2.2.4. Research activities are mainly concentrated on providing building material for low-cost housing.

## 2. Highway Sector.

### 2.1. Policy.

In REPELITA II programs of the highway sector is based on policy on distribution of development by taking into account regional development principles which will lead toward the realization of more balancing inter-regional growth rate. Accordingly, the policy is formulated as follows :

- Increasing ability of highway / road network in order to stimulate development of urban and rural areas where urban areas has the function as terminal of trade services and transportation, and serving the surrounding areas in commodity marketing process.
- developing highway / road network in urban areas to control urban areas development in order to avoid excessive and deteriorating urbanization process.



2.2. Program and Implementation.

2.2.1. Program

To continue programs as formulated and carried out in REPELITA I.

To achieve the intended objectives according to the plan, it is necessary :

- to upgrade / improve personnel ability by providing in - service training / courses at the national level and provincial level as well.
- to improve information system to support planning and implementation.
- to carry out more intensively research, survey, and investigation.
- to improve management of equipment.
- to explore and utilize to the maximum extent rock asphalt which is available at the large deposit in Indonesia.

Implementation ( up to the fourth year of REPELITA II ).

2.2.2.1. Road.

- 2.2.2.1.1. rehabilitation of 5,258 km.
- 2.2.2.1.2. upgrading of 3,384 km.
- 2.2.2.1.3. construction of 633 km.
- 2.2.2.1.4. maintenance of 38,244 km.
- 2.2.2.1.5. resettlement area development 1,005,8 km.

2.2.2.2. Bridge.

- 2.2.2.2.1. rehabilitation of 19,123 m.
- 2.2.2.2.2. upgrading of 14,845 m.
- 2.2.2.2.3. construction of 4,858 m.
- 2.2.2.2.4. maintenance of 13,163 m.
- 2.2.2.2.5. resettlement area development 225 bridges.

3. Water Resources Development Sector.

3.1. Policy.

Based on the general policy of REPELITA II aforesaid, the development in the field of water resources are formulated in five general principles :

- 3.1.1. To continue the rehabilitation works and to improve the existing irrigation networks.

- 3.1.2. To construct new irrigation network including reclamation works for the purpose of extension of agricultural areas.
- 3.1.3. To intensify the protection system of food producing areas from natural disaster.
- 3.1.4. To utilize at the maximum extent the potentials of water resources and to develop overall river basin.
- 3.1.5. To intensify research and investigation in water resources techniques and to formulate water resources regulations.

### 3.2. Program and Implementation.

#### 3.2.1. Program.

Programs of water resources development in REPELITA II are mainly to continue programs as formulated in REPELITA I.

#### 3.2.2. Implementation ( up to the fourth year of REPELITA II ).

- 3.2.2.1. rehabilitation and improvement of irrigation network supporting 405,823 Ha. rice field.
- 3.2.2.2. construction new irrigation networks supporting 213,748 Ha. rice field.
- 3.2.2.3. river training and development of river basin swampy areas covering area of 302,420 Ha. for the purpose of rice production.

## 4. Electric Power Sector.

### 4.1. Policy.

Development in Electric Power Sector is aimed to increase installed capacity and to improve the balance between installed capacity and its transmission and distribution system.

The planning and its development is based on :

- regional approach in terms of attaining regional electric interconnected system, including its generation, transmission and distribution.
- adjustment of development program to meet the real demand.
- development of rural electrification by developing micro hydro power station or diesel power generation.
- study on the use of nuclear power toward modern technology application in electric power generation.

### 4.2. Program and Implementation.

#### 4.2.1. Program.

This sector has the program of increasing electric power which is carried out by :

- developing and undertaking electric power in an efficient manner with high reliability and reasonable price based on sound calculation, which concerns with the increase of installed capacity power production and distribution as well of 1,618 MW.

- preparing and adjusting the capacity to multiply the electric power supply in compliance with the stage of national development, in order to fill the shortage and the need of electric power within the shortest possible period.
- considering the short range target which should be based on socio-techno-economic calculation as accurate as possible to select the appropriate power conversion method and/or natural resources into electric power as well as making use of technological development.

#### 4.2.2. Implementation.

- 4.2.2.1. Electric Power Stations with the installed capacity of approximately 940,451 MW.
- 4.2.2.2. Transmission network of approximately 1,630,95 km.
- 4.2.2.3. Electric Power Sub-stations : 50 units/1,148,33 MVA.
- 4.2.2.4. Distribution network of :
  - a. Medium voltage : 5,358,274 km.
  - b. Low voltage : 5,290,648 km.
- 4.2.2.5. Transformer stations : 12,303 units.

### 5. Gas Power Sector.

#### 5.1. Policy.

The main policy is the improvement of state Gas Enterprise aimed at the attainment of break event point at the end of REPELITA II.

#### 5.2. Program and Implementation.

##### 5.2.1. Program.

Program of this sector, i.e. increasing gas supply, covers :

- 5.2.1.1. Increase of gas supply.
- 5.2.1.2. Rehabilitation of Gas distribution network.
- 5.2.1.3. Rehabilitation of Gas meter.
- 5.2.1.4. Supporting services.

##### 5.2.2. Implementation.

- 5.2.2.1. Increase of Gas Supply up to 684 ( $10^6$  kcal / day ).
- 5.2.2.2. Rehabilitation of Gas Distribution Network up to 523,49 km.
- 5.2.2.3. Replacement of Gas Meter up to 19,481 units.

## V. GENERAL POLICY OF REPELITA III.

### 1. Basic Strategy.

The basic strategy in the Physical Infrastructure Development Policy of the Ministry of Public Works contains :

- 1.1. consistent and effective continuation of the planning, programming and implementation of Programs and Project of REPELITA III and REPELITA III coherent with the development objectives.
- 1.2. Integrative efforts in the preparation of concepts, plans and programs of the Ministry of Public Works within the framework of National Development.
- 1.3. Physical Infrastructure Development as a means to enhance balanced regional development.
- 1.4. The integration of the sectoral approach and the regional approach through optimisation of plans and programs.
- 1.5. Taking into account new demands and aspiration arising from the development process.

### 2. Program and Implementation.

Rehabilitation programs which has been started in REPELITA I is expected to be completed in REPELITA III. Besides, it is also expected to improve integrated development policy in attaining development objectives by considering distribution of the development activities especially interregional growth as a basis toward the realization of social justice for the whole people through implementation of various development programs, i.e. water resources development to support food production, road and bridges development to create and to enhance accessibility and development of housing and its hygienic environment which also supports resettlement areas within the frame of the national transmigration program.

Appendices: I - VI

1. The first part of the document discusses the importance of maintaining accurate records of all transactions and activities. It emphasizes that proper record-keeping is essential for transparency and accountability, particularly in the context of public administration and financial management. The text highlights that records should be kept in a clear, organized, and accessible manner, ensuring that all relevant information is captured and preserved for future reference.

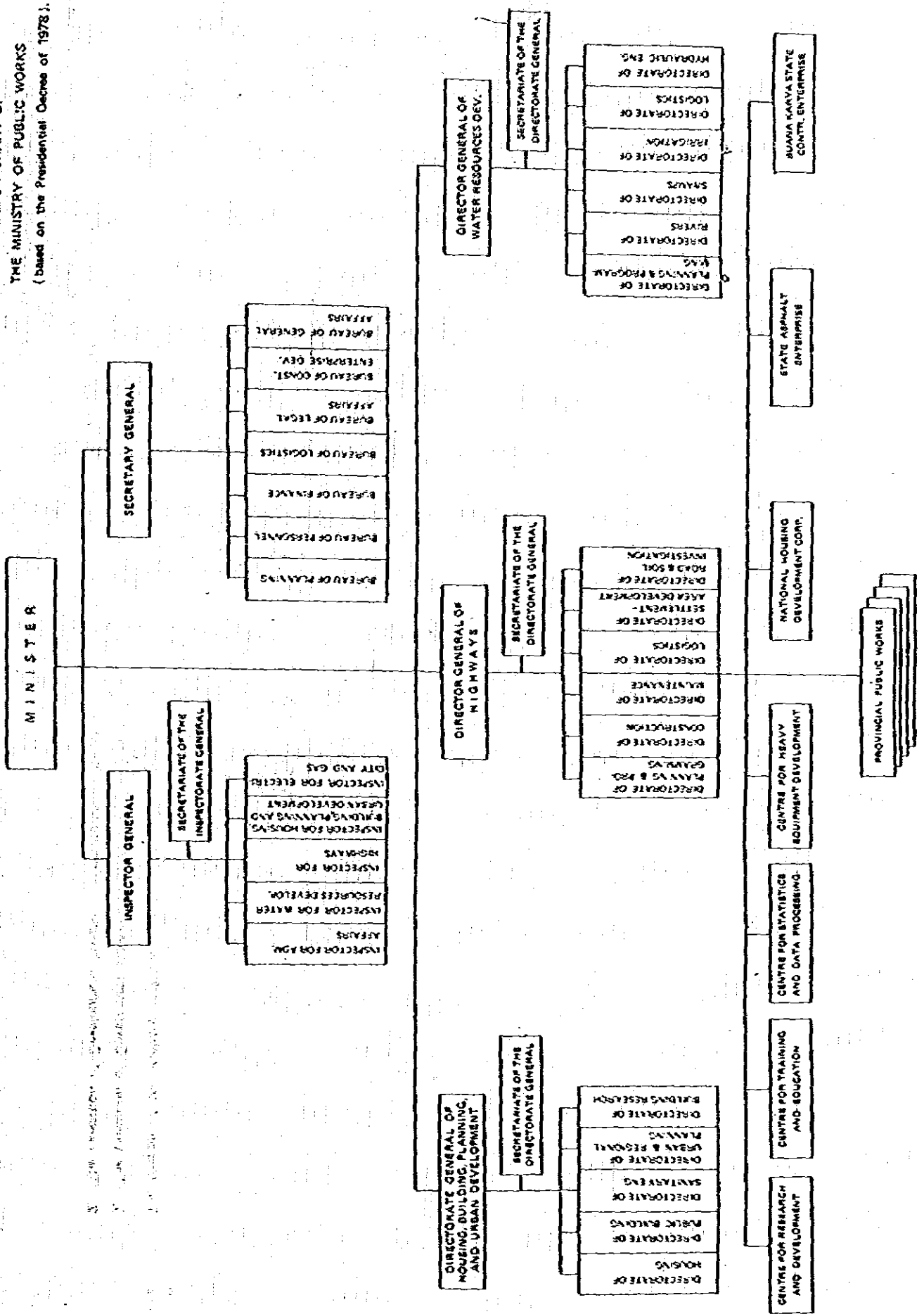
2. The second part of the document focuses on the role of internal controls and risk management. It states that effective internal controls are necessary to prevent fraud, errors, and mismanagement of resources. The text outlines various control mechanisms, such as segregation of duties, regular audits, and the implementation of risk assessment frameworks. It stresses that these controls should be tailored to the specific needs and risks of the organization, and that they should be continuously monitored and updated to address changing circumstances.

3. The third part of the document addresses the issue of data security and information protection. It notes that in an increasingly digital world, the protection of sensitive information is a top priority. The text discusses the importance of implementing robust security measures, including encryption, access controls, and regular security audits. It also emphasizes the need for staff training and awareness programs to ensure that all employees understand their responsibilities in maintaining data security and protecting organizational information.

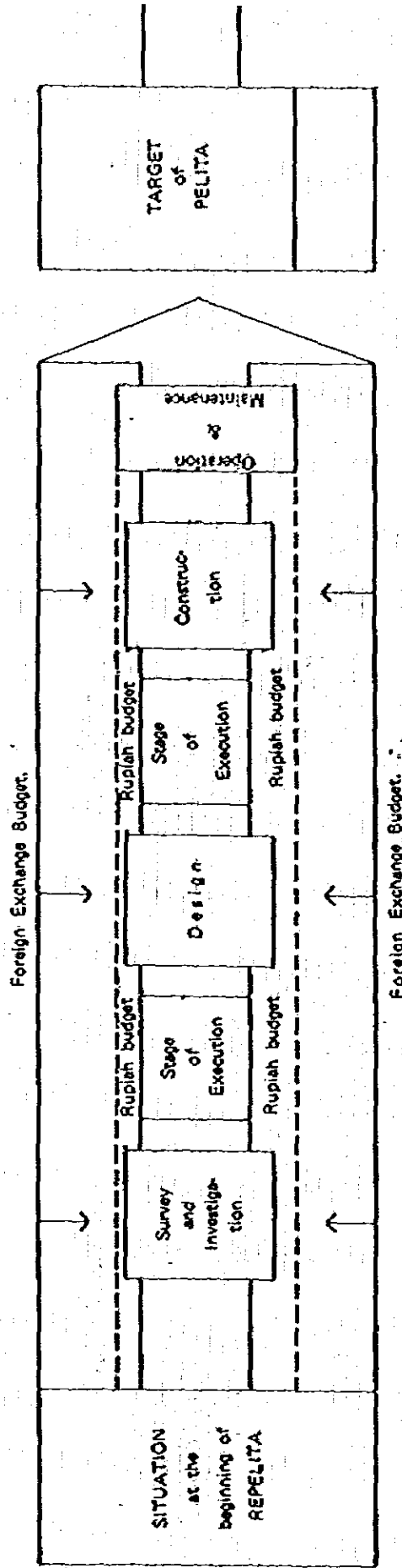
4. The fourth part of the document discusses the importance of communication and collaboration. It states that effective communication is crucial for the success of any organization, as it enables the sharing of information, the resolution of conflicts, and the coordination of efforts. The text highlights the need for clear communication channels, regular meetings, and the use of collaborative tools to facilitate teamwork and ensure that all team members are aligned with the organization's goals and objectives.

5. The fifth and final part of the document discusses the importance of continuous improvement and innovation. It notes that organizations must constantly evaluate their performance and seek ways to improve their processes, products, and services. The text emphasizes the role of innovation in driving growth and competitiveness, and encourages the implementation of a culture of innovation that values creativity, experimentation, and learning from failure. It also discusses the importance of staying up-to-date with industry trends and emerging technologies to ensure that the organization remains relevant and competitive in the market.

ORGANIZATION CHART OF  
THE MINISTRY OF PUBLIC WORKS  
(based on the Presidential Decree of 1978).



DEVELOPMENT MISSION EXECUTION DIAGRAM



Note : 1. The Mission of the Ministry of Public Works covers :

1. The execution of Government Administration (Regulating function).
2. The execution of Development Programs (Development function).



INFRASTRUCTURE DEVELOPMENT : WATER RESOURCES DEVELOPMENT

- SITUATION BEFORE REPELITA I.
- PHYSICAL IMPLEMENTATION OF REPELITA I.
- TARGET OF REPELITA II.
- REALIZATION UP TO THE FOURTH YEAR OF REPELITA II.
- PROSPECT OF REPELITA III.

| SITUATION AT THE BEGINNING OF REPELITA I.  |  | EFFORTS TO ACHIEVE THE TARGET OF REPELITA I.   |  | PHYSICAL REALIZATION DURING THE REPELITA I 1968/1970 - 1973/1974  |  | REPELITA II  |                    | PROSPECTS OF REPELITA III 1974/1980 - 1983/1984 |   |  |  |
|--|--|--|--|---|--|--|--------------------|---|---|--|--|
|  |  |  |  |   |  | ACTIVITY   | TARGET REPELITA II | REALIZATION DURING 74/75 - 75/76                |   |  |  |
| <ul style="list-style-type: none"> <li>- The Existing rice fields cover 3.7 million Ha. of which 3,962,002 Ha are irrigated.</li> <li>- Imperfect irrigation : 1,289,132 Ha.</li> <li>- Semi Technical irrigation : 1,251,337 Ha.</li> <li>- Technical irrigation : 1,482,833 Ha.</li> </ul> |  | <ul style="list-style-type: none"> <li>- Rehabilitation and improvement of existing irrigation network.</li> <li>- Construction of new irrigation network with priority to the quick yielding areas.</li> <li>- Flood control in the food producing areas.</li> <li>- Development of swampy areas.</li> <li>- Water resources development planning.</li> </ul> |  | <ul style="list-style-type: none"> <li>- Rehabilitation and improvement of irrigation network supporting : 957,834 Ha. rice field.</li> <li>- Extension of the existing irrigation supporting : 171,245 Ha. rice field.</li> <li>- River training and safeguarding of : 285,969 Ha. rice field.</li> <li>- Other irrigation construction : Tidal irrigation, Flood Control, etc. : 100,022 Ha.</li> </ul> |  | <ul style="list-style-type: none"> <li>- Rehabilitation and improvement of Irrigation Network.</li> <li>- Extension of existing irrigation</li> <li>- River training and swampy area development.</li> </ul> | 834,898 Ha.        | 405,823 Ha.                                     | <ul style="list-style-type: none"> <li>- To continue the unfinished projects carried forward from REPELITA II.</li> <li>- To develop multipurpose water resources projects.</li> <li>- Improvement of the operation and maintenance program.</li> </ul> |  |  |
|  |  |  |  |   |  | <ul style="list-style-type: none"> <li>- Simple irrigation : 850,000 Ha.</li> <li>- Rice field area : 200,000 Ha.</li> <li>- Protected area from flood : 510,100 Ha.</li> </ul>                              | 1,000,000 Ha. *)   | 213,798 Ha.                                     |   |  |  |
|  |  |  |  |   |  |  | 710,100 Ha. **)    | 302,420 Ha.                                     |   |  |  |

INFRASTRUCTURE DEVELOPMENT : H I G H W A Y S

- SITUATION BEFORE REPELITA I.
- PHYSICAL IMPLEMENTATION OF REPELITA I.
- TARGET OF REPELITA II.
- REALIZATION UP TO THE FOURTH YEAR OF REPELITA II.
- PROSPECT OF REPELITA III.

| SITUATION AT THE BEGINNING OF REPELITA I.  | EFFORTS TO ACHIEVE THE TARGET OF REPELITA I.   | PHYSICAL REALIZATION DURING THE REPELITA I 1980/1970 - 1973/1974  | REPELITA II  |   | PROSPECTS OF REPELITA III 1979/1980 - 1983/1984   |
|--|--|---|--|---|---|
|  |  |   | ACTIVITY   | TARGET REPELITA II  |   |
| <ul style="list-style-type: none"> <li>• State Roads ± 10,000 km.</li> <li>• Provincial Roads ± 20,000 km.</li> <li>• District Roads ± 60,000 km.</li> <li>• Municipal Roads ± 3,000 km.</li> <li>• Road of National &amp; Regional importance : ± 40,000 km.</li> <li>• 30 % of State &amp; Provincial Roads are deteriorated.</li> </ul> | <ul style="list-style-type: none"> <li>• Total rehabilitation of road networks with priority to economic roads.</li> <li>• Road &amp; bridge maintenance.</li> <li>• Road &amp; bridge upgrading.</li> <li>• Road &amp; bridge construction.</li> <li>• Development of Infrastructure for Transportation and Tourism.</li> </ul> | <ul style="list-style-type: none"> <li>• Roads :                             <ul style="list-style-type: none"> <li>- Rehabilitation : 6,034.6 km.</li> <li>- Upgrading : 3,704.5 km.</li> <li>- Construction : 307.2 km.</li> </ul> </li> <li>• Bridges :                             <ul style="list-style-type: none"> <li>- Rehabilitation : 20,331 m.</li> <li>- Upgrading : 10,562.6 m.</li> <li>- Construction : 15,562.6 m.</li> </ul> </li> <li>• Road Maintenance (annually) :                             <ul style="list-style-type: none"> <li>- State &amp; Provincial road : 25,000 km.</li> </ul> </li> <li>• Workshops :                             <ul style="list-style-type: none"> <li>- Base workshops : 5</li> <li>- Workshops : 20</li> <li>- Laboratorium : 37</li> </ul> </li> </ul> | <ol style="list-style-type: none"> <li>1. Maintenance :                             <ul style="list-style-type: none"> <li>- Roads : 32,000 km<sup>2</sup></li> <li>- Bridges : 13,183 m.</li> </ul> </li> <li>2. Rehabilitation :                             <ul style="list-style-type: none"> <li>- Roads : 14,480.50 km.</li> <li>- Bridges : 16,123 km.</li> </ul> </li> <li>3. Up grading :                             <ul style="list-style-type: none"> <li>- Roads : 7,907 km</li> <li>- Bridges : 14,845 km.</li> </ul> </li> <li>4. Construction :                             <ul style="list-style-type: none"> <li>- Roads : 1,855 km.</li> <li>- Bridges : 633 km.</li> </ul> </li> <li>5. Reestablishment area development :                             <ul style="list-style-type: none"> <li>- Roads : 4,956 km.</li> <li>- Bridges : 375 bridges.</li> </ul> </li> </ol> | <p>REALIZATION UP TO THE FOURTH YEAR OF REPELITA II</p> <p>38,244 km.<br/>13,183 m.<br/>6,256 km.<br/>16,123 km.<br/>3,384 km.<br/>14,845 km.</p> | <ul style="list-style-type: none"> <li>• Roads and Bridges :</li> <li>• To continue the unfinished projects carried forward from REPELITA II.</li> <li>• To intensify the upgrading activities.</li> <li>• To develop the intercity highways communication program.</li> <li>• To intensify the maintenance program.</li> </ul> |

**INFRASTRUCTURE DEVELOPMENT : WATER SUPPLY, SEWERAGE AND GARBAGE DISPOSAL.**

- SITUATION BEFORE REPELITA I.
- PHYSICAL IMPLEMENTATION OF REPELITA I.
- TARGET OF REPELITA II.
- REALIZATION UP TO THE FOURTH YEAR OF REPELITA II.
- PROSPECT OF REPELITA III.

| SITUATION AT THE BEGINNING OF REPELITA I.  |  | REPELITA II  |   | PROSPECTS OF REPELITA III   |
|--|--|--|---|---|
|  |  | ACTIVITY   | TARGET REPELITA II  | REALIZATION UP TO THE FOURTH YEAR OF REPELITA II  |
| <ul style="list-style-type: none"> <li>• WATER SUPPLY :<br/>Total Urban Population : 22,000,000.</li> <li>• WATER SUPPLY CAPACITY 9,000 litres/second, (200 MGD).<br/>Average available water consumption 36.4 litres/cap/day 9.4 gal/cap/day.</li> <li>• SEWERAGE &amp; GARBAGE DISPOSAL :<br/>- Poor sewer system,<br/>- Poor refuse collection disposal.</li> </ul> | <p><b>EFFORTS TO ACHIEVE THE TARGET OF REPELITA I</b></p> <ul style="list-style-type: none"> <li>• INTENSIFICATION OF WATER SUPPLY :<br/>- Rehabilitation &amp; improvement of existing water supply.</li> <li>• SEWERAGE &amp; GARBAGE DISPOSAL :<br/>- Rehabilitation &amp; improvement of existing sewer &amp; refuse incinerators.<br/>- Improvement of refuse collection &amp; Disposal System.</li> <li>• EXTENSIFICATION WATER SUPPLY :<br/>- Ground water supply development.<br/>- Surface water supply. Building of additional water purification plants.<br/>- Extension of existing water distribution network to conform the new condition.</li> <li>• SEWERAGE &amp; GARBAGE DISPOSAL :<br/>- Extension of existing sewers in densely populated cities.</li> </ul> | <p><b>PHYSICAL REALIZATION DURING THE REPELITA I 1969/1970-1973/1974</b></p> <ul style="list-style-type: none"> <li>• WATER SUPPLY :<br/>- Rehabilitation &amp; improvement of existing water supply capacity : 9,225 litres/second.</li> <li>• SEWERAGE &amp; GARBAGE DISPOSAL :<br/>- Rehabilitation in several cities.</li> </ul> | <p><b>ACTIVITY</b></p> <ol style="list-style-type: none"> <li>1. Water Supply and Environment Hygiene.</li> <li>2. Sewerage &amp; Garbage Disposal :<br/>- Improved Sewer Facilities in Large Cities.<br/>- Organized Collection &amp; Disposal of Refuse.</li> </ol> | <p><b>PROSPECTS OF REPELITA III 1979/1980 - 1983/1984</b></p> <ul style="list-style-type: none"> <li>• WATER SUPPLY :<br/>- To continue the unfinished projects carried forward from REPELITA II,<br/>- To provide the minimum consumption for urban Population.</li> <li>• SEWERAGE &amp; GARBAGE DISPOSAL :<br/>- To provide the cities with proper sewerage &amp; waste disposal.</li> </ul> |
|  |  |  | 20,000 l/second   | 763 l/second.   |

INFRASTRUCTURE DEVELOPMENT : HOUSING DEVELOPMENT.

- SITUATION BEFORE REPELITA I.
- PHYSICAL IMPLEMENTATION OF REPELITA I.
- TARGET OF REPELITA II.
- REALIZATION UP TO THE FOURTH YEAR OF REPELITA II.
- PROSPECT OF REPELITA III.

| SITUATION AT THE BEGINNING OF REPELITA I.  |  | REPELITA II  |  | PROSPECTS OF REPELITA III<br>1979/1980 - 1983/1984.   |
|--|--|--|--|---|
|  |  | ACTIVITY   | TARGET REPELITA II   | REALIZATION UP TO THE FOURTH YEAR OF REPELITA II  |
| <ul style="list-style-type: none"> <li>• POPULATION :<br/>Urban : 22,000,000 ( 20% ),<br/>Rural : 92,000,000 ( 80% ),<br/>Annual Growth : 2.3%.</li> <li>• HOUSING.<br/>Housing Shortage : 1,200,000<br/>Annual Housing Construction : 710,000 *)<br/>Urban : 76,000<br/>Rural : 178,000</li> <li>• POLICY :<br/>Non - Effective housing legislation and development policy.</li> </ul>  |  | <ul style="list-style-type: none"> <li>• Kampung Improvement.</li> <li>• Land Development ( sites &amp; services ).</li> <li>- Government :</li> <li>- Local Government/Private Company :</li> <li>• Low Cost Housing :</li> </ul> | <ul style="list-style-type: none"> <li>• 53,000 units</li> <li>• 172,000 units</li> <li>• 20,000 houses</li> </ul> | <ul style="list-style-type: none"> <li>• To continue the unfinished projects carried forward from REPELITA II.</li> <li>• Intensive Housing development program.</li> <li>• Housing information program.</li> </ul> |
| <p>PHYSICAL REALIZATION DURING THE REPELITA I 1969 / 1970 - 1973 / 1974</p> <ul style="list-style-type: none"> <li>• HOUSING IMPROVEMENT 1,376 Units.</li> <li>• JAKARTA LAND DEVELOPMENT ( sites &amp; services ).</li> <li>• HOUSING INFORMATION PROJECT.</li> </ul>   |  |  |  |   |
| <p>EFFORTS TO ACHIEVE THE TARGET OF REPELITA I</p> <ul style="list-style-type: none"> <li>• INTENSIFICATION :<br/>- Improvement of Technical Quality.<br/>- Acquisition of Building Costs.</li> <li>• EXTENSIFICATION.<br/>( Promotion of Housing Overlapment ).<br/>- Land Development Project.<br/>- Stimulate housing development organization.<br/>- Initiate housing development.</li> <li>• SURVEY, STATISTICS, RESEARCH AND PROGRAMMING.</li> </ul> |  |  |  |   |
| <p>SITUATION AT THE BEGINNING OF REPELITA I.</p> <ul style="list-style-type: none"> <li>• POPULATION :<br/>Urban : 22,000,000 ( 20% ),<br/>Rural : 92,000,000 ( 80% ),<br/>Annual Growth : 2.3%.</li> <li>• HOUSING.<br/>Housing Shortage : 1,200,000<br/>Annual Housing Construction : 710,000 *)<br/>Urban : 76,000<br/>Rural : 178,000</li> <li>• POLICY :<br/>Non - Effective housing legislation and development policy.</li> </ul>                   |  |  |  |   |



1. The first part of the document discusses the importance of maintaining accurate records of all transactions and activities. It emphasizes that proper record-keeping is essential for transparency and accountability, particularly in financial matters. This section also touches upon the legal implications of failing to maintain such records, which can lead to severe consequences for individuals and organizations alike.

2. The second part of the document delves into the specific requirements for record-keeping, including the types of documents that must be retained and the duration for which they should be kept. It provides a detailed overview of the various categories of records, such as financial statements, contracts, and correspondence, and outlines the best practices for organizing and storing these documents to ensure they are easily accessible and secure.

3. The third part of the document addresses the challenges associated with record-keeping, particularly in the context of digital information. It discusses the risks of data loss, corruption, and unauthorized access, and offers strategies to mitigate these risks. This includes the use of secure storage solutions, regular backups, and access controls to protect sensitive information.

4. The fourth part of the document focuses on the role of record-keeping in legal proceedings. It explains how well-maintained records can serve as crucial evidence in court cases, helping to establish the facts of a matter and support a party's claims or defenses. It also discusses the importance of preserving records in their original form and the potential consequences of tampering with or destroying records.

5. The fifth part of the document provides a summary of the key points discussed and offers final thoughts on the importance of record-keeping. It reiterates that maintaining accurate records is not just a legal obligation but also a best practice for any individual or organization seeking to operate with integrity and transparency. The document concludes by encouraging readers to take the necessary steps to ensure their records are up-to-date, accurate, and secure.



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