

第VIII編 經濟效果



第Ⅳ編 経済評価

第1章 概論

本プロジェクトは、インドネシア国家家族計画プログラム内のコンドーム必要量を国内生産で賄うことを目的としている。1969/70年に開始されたインドネシアの国家家族計画プログラムは、既に11年を経過し、プログラム対象地域もジャワ、バリから次第に広がり、現在では全国に及んでいる。家族計画実行者数のみならず、効率的な家族計画サービスネットワークの確立の面でも、国家プログラムはかなり成功裡に進んでいるといえよう。

ピル、IUD、コンドームといった避妊器具・薬品は、国家プログラムの中で家族計画実行者に対し、無料で供給されている。また、供給方法としては、家族計画実行者の自由選択に任せる、“カフェテリア方式”を採用している。しかしながらカフェテリア方式を採用しながらも、その実態は避妊器具・薬品のほとんど全てをUSAID、UNFPA等援助機関からの供与に依存してきた事情により、援助機関側の都合によってその供給は品質、量の面で不安定なものとならざるをえなかった。家族計画実行者に対する避妊器具・薬品の安定供給を確保するために、インドネシア政府は、避妊器具・薬品の国内生産開発を強く望んでいる。インドネシア政府は既にアメリカの援助によってピルの国内生産を開始しており、さらにIUDの国内生産も計画している。そして現在、ピル、IUDに次ぎ、第3のシェアを示めるコンドームの国内生産が、強く望まれているのである。コンドーム使用者は、全家族計画実行者の6割強、また新規実行者の1.0割を占めている。第Ⅱ編第2、3章において既述のとおり、コンドーム使用者の比率はある程度コンドームの供給状況によって左右されており、安定供給が保証されれば、その使用者比率も上昇することが予想されている。また、次の理由によってコンドームの需要が、今後、さらに伸びることも予想される。

- (1) 最も普及しているピルについては、プログラム経過年数・実行者数の増大に伴ない、出血等の副作用を訴え、家族計画そのものを中止する例も増えており、それに代わる避妊方法が求められている。
- (2) IUDについては、婦人科の診察に対する宗教的制約、身体に異物を挿入することに対する心理的抵抗、あるいは、はずれるなどの不安があり、その普及を妨げている。
- (3) さらにピル、IUDが女性による避妊方法であるのに対し、男性による避妊の普及・男性の家族計画への積極的参加の要請が高まっている（コンドームは男性による唯一の避妊法といえる）。
- (4) また、民間ベースでのコンドーム輸入量も近年増加しており、最新統計によれば、1980年において7.5万クロスが記録されるなど、自発的な使用者も都市を中心に増えているよ

うに見受けられる。

第2章 本プロジェクトの経済効果

2-1 経済収益率

経済全体からみた本プロジェクトの収益性をみるためには、前編で行なった財務分析にいくつかの調整を行う必要がある。すなわち、各経済主体間の移転項目の調整とキャッシュフロー計算に用いた価格の調整である。経済分析は対象プロジェクトの経済に対する効果をみるもので、そこで用いられる価格は、各財・用役の実際の機会費用を反映したものでなくてはならない。本プロジェクトの場合、土地、非熟練労働者、及び燃料の3項目に対し評価価格の調整を行う必要がある。

(1) 所得税

移転項目の調整としては、本プロジェクトの場合、関税、国内取引税の免税措置が採られているため、法人税のみが対象となる。

(2) 土地

財務上、土地購入価格は7,000万ルピア計上されている。しかしながら、工場建設予定地は現在水田として利用されており、その生産力等からみて、その機会費用は、年62万ルピアが妥当と考えられる。算定根拠は次のとおり。

バンドン周辺の生産量(精米ベース)	年22t/ha
西ジャワの稲作生産費用	生産量の約30%
米の国際価格(タイ米5% broken基準)	US\$433/t

$$433 \frac{\$/t}{\times} 620 \frac{Rp/\$}{\times} \times 22 \frac{t/ha}{\times} \times 1.5 \frac{ha}{\times} \times (1-0.3) = 620,142 \frac{Rp}{\text{年}}$$

(3) 非熟練労働者

P.T. KIMIA FARMA の賃金水準を参考として5万~6万ルピアが財務上計上されている。しかしながら、これは西ジャワの一般的賃金水準と比べて過大評価と考えられる。最低賃金ガイドライン及び賃金統計等から判断して、月当り35万ルピアが妥当と考えられる。算定根拠は次のとおり。

最低賃金	Rp700/日
月稼働日数	25日
現物給与(食事など)	現金給与と同様

$$700 \frac{Rp/\text{日}}{\times} \times 25 \frac{\text{日/月}}{\times} \times 2 = 35,000 \frac{Rp}{\text{月}}$$

(4) 燃料

インドネシアの場合、石油製品国内価格については、政府補助金によって、低目に抑えられている。従って、経済分析を行うには、国際価格によって、評価し直す必要がある。本プロジェクトについては、財務分析上グロス当り89.7ルピアとされているが、経済分析では石油製品の国際価格を基準として207ルピア計上する。

外貨、製品価格等その他については、財務分析で用いた市場価格が経済全体に対する真の価値を反映したものと考えられる。以上の移転項目の調整及び価格の調整を行った後に、本プロジェクトの内部経済収益率を計算したのが表Ⅱ-1である。内部経済収益率は販売価格US\$4.0、US\$4.5について、それぞれ8.59%、12.18%と計算される。

2-2 国家人口家族計画プログラムへの効果

人口家族計画は、インドネシアの経済社会開発における最優先分野の一つとされている。国家人口・家族計画プログラムの成否（具体的には小家族主義の普及を通じての出生抑制）がインドネシアの経済社会開発プログラムそのものの成否の鍵であるといっても、決して過言ではない。本プロジェクト実施によって質と量の両面でコンドームの安定供給が保証されることになる。国家プログラムにおける、コンドームの安定供給は、次の4つの面で、インドネシア国家人口家族計画プログラムに貢献する。

- (1) ビルやIUDに対する心理的抵抗感によって（例えばビルについてはその副作用への懸念、IUDについては体内に異物を入れることに対する抵抗感あるいは、他人に肌を見せることに対する抵抗感など）、さらにコンドームの入手難（コンドーム使用者となっても家族計画クリニックにおける供給量の不足によって、薬局やドラッグストアに於て有料で購入しなくてはならないのが現状）によって、従来、家族計画への参加を躊躇していた夫婦の参加が促進される。
- (2) 現在既にビルあるいは、IUDの使用者であるが、副作用あるいは、はずれるといった事故を経験した結果、家族計画そのものを中止しようとする者を、コンドームへの転換を指導することによって、家族計画からの離脱を防ぐことができる。
- (3) これまで遅れていた家族計画への男性の参加が促進される。
- (4) 両性の積極的参加が可能となれば、家族計画への一般的知識、理解も急速に広まる。

2-3 本プロジェクトのその他の便益

本プロジェクトのその他の経済効果としては次の点が挙げられる。

(1) 外貨節約

これまでインドネシア政府は海外からの援助・輸入によって、そのコンドーム必要量を全面的に賄ってきた。無償あるいは有償で、大量のコンドーム供与を行ってきたUSAIDは1976/77年以降、その供与を中止した。そのため現在、UNFPA等からの援助で国内必要量を賄っているものの、今後はインドネシア政府自らの予算で貴重な外貨を支払ってコンドームを入手せざるを得なくなっている。事実、インドネシア政府は1980/81年には80万米ドル、さらに、1981/82年には44万米ドルのコンドームを購入した。

第3編の第2章で検討した国家プログラム内のコンドーム必要量を、全て国家予算によって購入するならば、購入価格をグロス当り、4.0米ドルとしても年間220~360万米ドルの外貨が必要となってくる。本プロジェクト実施に伴い、国内生産で必要量が確保されるようになれば、本プロジェクト実施に必要な外貨(機械設備輸入、原材料輸入等)を相殺しても、かなりの外貨節約が期待できる。純外貨節約額を表Ⅱ-2に示す。

(2) 国産ラテックスの品質向上

本プロジェクトはインドネシア産ラテックスを使用することを前提としている。本来コンドーム生産にはかなり良質のラテックスが必要とされる。本プロジェクトに使用するためには、現在の国産ラテックスの品質を技術指導等によりある程度改善する必要がある。従って本プロジェクトの実施によって、インドネシア国産ラテックスの品質向上(ゴムの木の質の向上、ラテックス採集・精製技術の向上を通して)などが結果として期待できる。

(3) 経営・生産技術のノウハウの蓄積および労働者の技術の向上

2-4 結 論

本プロジェクトの内部経済収益率は、既に示したとおり製品価格の仮定によって年8.59~12.18%となる。経済全体に対する投資の収益性自体は、さほど高いものではない。しかしながら、本プロジェクトは、インドネシア経済開発の中でも最優先分野の一つである国家人口家族計画プログラムに対する高い貢献度が考えられ、また、コンドームの輸入代替による外貨節約効果、その他の経済効果も考えられる。従ってその存立効果は充分認められる。

表Ⅳ-1-1 内部経済収益率 ケース I

Case I Selling price: US\$4.0/gross

Unit: Rp1,000

Year	(1) Production (gross)	(2) Sales Revenue	(3) Total Capital Requirement	(4) Total Operation Costs	(5) Total (3)+(4)	(6) Net Benefit
0 1982/83	0		7,407,355		7,407,355	-7,407,355
1 1983/84	550,000	1,364,000	262,749	717,261	980,010	383,990
2 1984/85	610,000	1,512,000	29,200	806,677	835,877	676,923
3 1985/86	660,000	1,636,800	22,588	863,137	885,725	751,075
4 1986/87	690,000	1,711,200	16,147	896,033	912,180	799,020
5 1987/88	750,000	1,860,000	26,536	962,595	989,131	870,369
6 1988/89	800,000	1,984,000	22,158	1,017,585	1,039,743	944,257
7 1989/90	850,000	2,108,000	21,920	1,072,085	1,094,005	1,013,995
8 1990/91	900,000	2,232,000	21,956	1,126,585	1,148,541	1,083,459
9 1991/92	900,000	2,232,000	620	1,126,585	1,127,205	1,104,795
10 1992/93	900,000	2,232,000	620	1,126,585	1,127,205	1,104,795
11 1993/94	900,000	2,232,000	620	1,126,585	1,127,205	1,104,795
12 1994/95	900,000	2,232,000	620	1,126,585	1,127,205	1,104,795
13 1995/96	900,000	2,232,000	620	1,126,585	1,127,205	1,104,795
14 1996/97	900,000	2,232,000	620	1,126,585	1,127,205	1,104,795
15 1997/98	900,000	2,650,294	620	1,126,585	1,127,205	1,523,089

*: IRR = 8.5931%

表Ⅱ-1-2 内部経済収益率 ケースⅡ

Case II Selling Price: US\$4.5/gross

Unit: Rp1,000

Year	(1) Production (gross)	(2) Sales Revenue	(3) Total Capital Requirement	(4) Total Operation Cost	(5) Total (3)+(4)	(6) Net Benefit
0	1982/83	0	7,407,355		7,407,355	-7,407,355
1	1983/84	550,000	262,749	717,261	980,010	554,490
2	1984/85	610,000	29,200	806,677	835,877	866,023
3	1985/86	660,000	22,588	863,137	885,725	955,675
4	1986/87	690,000	16,147	896,033	912,180	1,012,920
5	1987/88	750,000	26,536	962,595	989,131	1,103,369
6	1988/89	800,000	22,158	1,017,585	1,039,743	1,192,257
7	1989/90	850,000	21,920	1,072,085	1,094,000	1,277,495
8	1990/91	900,000	21,956	1,126,585	1,148,541	1,362,459
9	1991/92	900,000	620	1,126,585	1,127,205	1,383,795
10	1992/93	900,000	620	1,126,585	1,127,205	1,383,795
11	1993/94	900,000	620	1,126,585	1,127,205	1,383,795
12	1994/95	900,000	620	1,126,585	1,127,205	1,383,795
13	1995/96	900,000	620	1,126,585	1,127,205	1,383,795
14	1996/97	900,000	620	1,126,585	1,127,205	1,383,795
15	1997/98	900,000	620	1,126,585	1,127,205	1,383,795

*: IRR = 12.1888%

表Ⅳ-2-1 紙外買節約額 ケース I 5年

Case I Selling price: US\$4.0/gross Unit: US\$1,000

	Foreign Exchange Expenditure					Net Foreign Exchange Savings						
	3%	4%	5%	3%	4%	5%	3%	4%	5%	Accumulation	%	Accumulation
0	9,974	9,974	9,974	9,974	9,974	-9,974	-9,974	-9,974	-9,974	-8,626	-9,974	-8,725
1	2,200	752	951	852	951	1,448	1,348	1,249	1,348	-8,626	1,249	-8,725
2	2,440	836	1,035	936	1,035	1,604	1,504	1,405	1,504	-7,122	1,405	-7,320
3	2,640	874	1,073	973	1,073	1,766	1,667	1,567	1,667	-5,455	1,567	-5,753
4	2,760	896	1,096	996	1,096	1,864	1,764	1,664	1,764	-3,691	1,664	-4,089
5	3,000	941	1,141	1,041	1,141	2,059	1,959	1,859	1,959	-1,732	1,859	-2,230
6	3,200	949	1,129	1,039	1,129	2,251	2,161	2,071	2,161	429	2,071	-159
7	3,400	957	1,116	1,037	1,116	2,443	2,363	2,284	2,363	2,792	2,284	2,125
8	3,600	965	1,104	1,034	1,104	2,635	2,566	2,496	2,566	5,358	2,496	4,621
9	3,600	935	1,054	995	1,054	2,665	2,605	2,546	2,605	7,963	2,546	7,167
10	3,600	905	1,005	955	1,005	2,695	2,645	2,595	2,645	10,608	2,595	9,762
11	3,600	875	955	915	955	2,725	2,685	2,645	2,685	13,293	2,645	12,407
12	3,600	845	905	875	905	2,755	2,725	2,695	2,725	16,018	2,695	15,102
13	3,600	815	855	835	855	2,785	2,765	2,745	2,765	18,783	2,745	17,847
14	3,600	785	805	795	805	2,815	2,805	2,795	2,805	21,588	2,795	20,642
15	3,600	755	755	755	755	2,845	2,845	2,845	2,845	24,433	2,845	23,487

*: A grace period for long-term loan; 5 years

表Ⅵ-2-2 純外貨節約額 ケースⅠ 7年

Case I Selling price: US\$4.0/gross

Unit: US\$1,000

	Foreign Exchange Expenditure			Net Foreign Exchange Savings		
	3%	4%	5%	3% Accumulation	4% Accumulation	5% Accumulation
0	0	9,974	9,974	-9,974	-9,974	-9,974
1	2,200	752	852	1,448	-8,526	1,348
2	2,440	836	936	1,604	-6,922	1,504
3	2,640	874	973	1,766	-5,156	1,667
4	2,760	896	996	1,864	-3,292	1,764
5	3,000	941	1,041	2,059	-1,233	1,959
6	3,200	979	1,079	2,221	988	2,121
7	3,400	1,017	1,116	2,383	3,371	2,284
8	3,600	1,017	1,104	2,583	5,954	2,496
9	3,600	980	1,054	2,620	8,574	2,546
10	3,600	942	1,005	2,658	11,232	2,595
11	3,600	905	955	2,695	13,927	2,645
12	3,600	867	905	2,733	16,660	2,695
13	3,600	830	855	2,770	19,430	2,745
14	3,600	793	805	2,807	22,237	2,795
15	3,600	755	755	2,845	25,082	2,845
					24,035	2,845
					20,142	2,845
					17,360	2,845
					14,640	2,845
					11,982	2,845
					9,387	2,845
					6,854	2,845
					4,383	2,845
					1,975	2,845
					-209	2,845
					-2,230	2,845
					-4,089	2,845
					-5,753	2,845
					-7,320	2,845
					-8,725	2,845

*: A grace period for long-term loan; 7 years

表Ⅷ-2-3 純外貨節約額 ケースⅡ 6年

Case II Selling price: USS4.5/gross

Unit: USS1,000

	Foreign Exchange Expenditure			Net Foreign Exchange Savings					
	3%	4%	5%	3%	4%	5%	Accumulation	%	Accumulation
0	9,974	9,974	9,974	-9,974	-9,974	-9,974	-9,974	-9,974	-9,974
1	2,475	852	951	1,723	-8,251	1,623	-8,351	1,524	-8,450
2	2,745	936	1,035	1,909	-6,342	1,809	-6,542	1,710	-6,740
3	2,970	874	1,073	2,096	-4,246	1,997	-4,545	1,897	-4,843
4	3,105	896	1,096	2,209	-2,037	2,109	-2,436	2,009	-2,834
5	3,375	941	1,141	2,434	397	2,334	-102	2,234	-600
6	3,600	946	1,129	2,651	3,048	2,561	2,459	2,471	1,871
7	3,825	957	1,116	2,868	5,916	2,788	5,247	2,709	4,580
8	4,050	965	1,104	3,085	9,001	3,016	8,263	2,946	7,526
9	4,050	935	1,054	3,115	12,116	3,055	11,303	2,996	10,522
10	4,050	905	1,005	3,145	15,261	3,095	14,413	3,045	13,567
11	4,050	875	955	3,175	18,436	3,135	17,548	3,095	16,662
12	4,050	845	905	3,205	21,641	3,175	20,723	3,145	19,807
13	4,050	815	855	3,235	24,876	3,215	23,938	3,195	23,002
14	4,050	785	805	3,265	28,141	3,255	27,193	3,245	26,247
15	4,050	755	755	3,295	31,436	3,295	30,488	3,295	29,542

*: A grace period for long-term loan; 5 years

表Ⅵ-2-4 純外貨節約額 ケースⅡ 7年

Case II Selling price: US\$4.5/gross

Unit: US\$1,000

	Foreign Exchange Expenditure			Net Foreign Exchange Savings			5% Accumulation	5% Accumulation
	3%	4%	5%	3% Accumulation	4% Accumulation	5% Accumulation		
0	0	9,974	9,974	9,974	-9,974	-9,974	-9,974	-8,450
1	2,475	752	852	951	1,723	-8,251	1,623	-6,740
2	2,745	836	936	1,035	1,909	-6,342	1,809	-4,843
3	2,970	874	973	1,073	2,096	-4,246	1,997	-2,834
4	3,105	896	996	1,096	2,209	-2,037	2,109	-600
5	3,375	941	1,041	1,141	2,434	397	2,334	1,821
6	3,600	979	1,079	1,179	2,621	3,018	2,521	4,430
7	3,825	1,017	1,116	1,216	2,808	5,826	2,709	7,288
8	4,050	1,017	1,104	1,192	3,033	8,859	2,946	10,209
9	4,050	980	1,054	1,129	3,070	11,929	2,996	13,192
10	4,050	942	1,005	1,067	3,108	15,037	3,045	16,237
11	4,050	905	955	1,005	3,145	18,182	3,095	19,345
12	4,050	867	905	942	3,183	21,365	3,145	22,515
13	4,050	830	855	880	3,220	24,585	3,195	25,747
14	4,050	793	805	818	3,257	27,842	3,245	29,042
15	4,050	755	755	755	3,295	31,137	3,295	

*: A grace period for long-term loan; 7 years

付 録

1

付録：1

調査団の編成

調査団の編成は以下の通りである。

	氏名	現職（調査団本邦出発当時）
団長	小山逸雄	相模ゴム工業株式会社 貿易課長
団員	牛尼富泰	相模工業（マレーシア）株式会社 株支配人
団員	柏木照男	相模ゴム工業株式会社 機核課長
団員	三嶽春雄	、 営業企画室長
団員	鈴木年雄	、 ゴム技術主任
団員	渡辺真知子	(財)国際開発センター 研究員 (相模ゴム工業株式会社嘱託)
団員	井上裕	同 同
団員	生井年緒	国際協力事業団敏工業調査部工業調査課

付録：2

現地調査日程

調査団は、現地調査の期間を通じて、インドネシア側との打ち合せにより必要資料の入手に努めた。また多くの関連工場を視察し設備や操業状況の検討等を行った。調査団の現地における調査日程の詳細は以下の通りである。

調査日程

- 6月 8日(月) 成田発、ジャカルタ着
- 6月 9日(火) 日本大使館に於て打合せ、JICA事務所挨拶
BKKBNに於て打合せ
- 6月10日(水) P.T. KIMIA FARMA本社訪問打合せ
P.T. KIMIA FARMA ジャカルタ2工場視察
バンドンへ移動
- 6月11日(木) P.T. KIMIA FARMAビル工場訪問打合せ
BANJARANの工場サイト2ヶ所視察
P.T. KTSM視察、事情聴取
- 6月12日(金) P.T. TANABE-ABADI訪問、事情聴取
BKKBN(ジャカルタ)訪問、資料集収
- 6月13日(土) PTPA視察
P.T. KTSM水質調査等事情聴取
HEALTH CENTER(KECAMATAN KOTA, JAKARTA)
訪問インタビュー
- 6月14日(日) 工場サイト3ヶ所視察測量
内部打合せ
- 6月15日(月) TECHNICAL UNIVERSITY IN BANDUNG
P.L.N(バンドン)電気事情聴取
P.T. KIMIA FARMA(バンドン)打合せ
- 6月16日(火) BKKBN(バンドン)打合せ
KLINIK K.B. PANSUNDAN(バンドン)インタビュー
KLINIK MOCH. RAMDAN(バンドン)インタビュー
BANK OF TOKYO(ジャカルタ)
- 6月17日(水) ジャカルタへ出発
P.T. EISAI INDONESIA(ブンチャック)視察

RESEARCH INSTITUTE OF ESTATE
 CROPS (ボゴール) ラテックス検査依頼打合せ
 IPPF (ジャカルタ) 資料収集
 (MPC/BKKBN/MEDIA PRODUCTION CENTER) 資料収集
 6月18日(木) P.T. KINMIA FARMA 本社訪問打合せ
 6月19日(金) 保健省, FDA, YAYASAN KUSUMA BUANA にて規格, 試験法
 等打合せ
 6月20日(土) BKKBN 中間打合せ
 6月21日(日) 内部打合せ
 6月22日(月) UNFPA (ジャカルタオフィス) 裏付調査
 UNICEF (ジャカルタオフィス) 裏付調査
 P.T. BRIDGESTONE TIRE INDONESIA 事情調査
 6月23日(火) JICA 事務所, 日本大使館にて打合せ
 二団員メダンへ出発
 6月24日(水) PTP V UTUNG BARU BELAWAN 訪問
 ラテックス工場視察
 JICA 事務所訪問
 P.T. GESURI LLOYD P.T. SANKYU INDONESIA
 運送状況等調査, 事情聴取
 6月25日(木) BAPINDO 訪問, 経済, 財務分析手法上の事情聴取
 OECF 事務所訪問 同上
 PTP V SUNGAI KARANG ラテックス分析資料入手
 6月26日(金) 世銀, 経済, 財務分析手法相談
 USAID (ジャカルタオフィス) 裏付調査
 二団員メダンよりジャカルタへ
 6月27日(土) P.T. DAINIPPON GITAKARYA PRINTING 包材調達に関
 する調査
 P.T. TOPPAN PRINTING INDONESIA 同上
 P.T. JAYA OHBAYASHI GUMI CORP 建設関係調査
 6月28日(日) 内部打合せ, 資料整理
 6月29日(月) P.T. KIMIA FARMA 最終打合せ
 JICA 事務所訪問打合せ
 6月30日(火) BKKBN 会議

- 7月 1日(水) 日本大使館訪問レポートの内容について打合せ
BKKBN, レポートの内容について打合せ
ATOMIC ENERGY RESEARCH INSTITUTE訪問
- 7月 2日(木) BAPPENAS訪問, 打合せ情況説明
日本大使館訪問 大使に情況説明
BKKBN打合せ
- 7月 3日(金) JICA事務所, 日本大使館訪問
- 7月 4日(土) BKKBN訪問, ジャカルタ発
- 7月 5日(日) 成田着

P.T. KIMIA FARMAの概要

1969年1月23日付の大抵領布告により5つの国営製薬会社はBHINNEKA KIMIA FARMAに吸収合併された。この合併の目的は製薬及医療用機器製造業分野に於ける激しい競争に於て国営製薬会社の立場を強化し、設備の効率化及び管理機構の統一化をはかる為のものであった。1971年8月16日に再び変更が行われ、新しい名前をP.T. KIMIA FARMAとし、運転資金40億ルピアで新国営株式会社として責任を負う事になった。

製造部門

バンドンとジャカルタの二ヶ所にあり、医薬品の製造、及び薬草栽培を行っている。医薬品としては213品目を製造し、錠剤、注射液、カプセル及び獣医用薬品等がある。又BKKBN（国家家族計画調整委員会）と協力して政府の産児制限用経口避妊薬（ピル）の製造を1979/80年より開始した。

薬品工業用栽培場

栽培場として(1)Citronella 375ヘクタール (2)Veliver 160ヘクタール (3)Patchouly 175ヘクタール (4)Lemongrass 2ヘクタール (5)Thyme 4ヘクタールがあり、Essential oilの生産を急速に開発中である。

品質管理

原材料のテストはもとより、全ての製品は販売される前に独自の品質管理試験室で、厳重な品質試験を行っており近代的な分析機器を備えている。

販売部門

販売部門は工場生産されたものの販売は勿論のこと、諸外国からの医薬品、医療用機器の輸入も行っている。その販売網は殆んどインドネシア全域をカバーしている。麻酔薬の販売は、完成品と同様に原料も特に厳しく、許可を与えられた代理店により取扱われている。

組織

P.T. KIMIA FARMAの薬品原料の製造、薬品の加工、薬用植物の植樹、研究試験、及び輸出入活動を含む販売活動は集団管理体制を取っている。管理は5人の役員より構成されるが、そのうち1人は社長である。

広く展開する活動は、良く管理された統制システムで支援され、意志伝達が速やかに行われており、又コンピューターも導入されている。

全従業員数は3639人であり、そのうち656人が薬剤師、医者、化学者、化学技師等であり、これらの専門家は、525人の薬剤助手と28人の化学、医療分析家の協力を得ている。

ピルの製造

P.T. KIMIA FARMAに於けるピル生産の規模は

建物の広さ(附帯設備も含め) 1,300 m²

敷地 2,000 m²

投下資本 設備 Rp 534,000,000

運転資金 Rp 311,000,000

合計 Rp 845,000,000

USAIDの援助は初年度(1979/80年)US\$1,200,000、2年目(1980/81年)はUS\$1,700,000であり、3年目より6年目までの4年間はUNFPAの援助をUS\$6,700,000受ける事になっている。これ等の援助は4種の主原料(ステロイド系)のみで添加剤等は含まない。生産量は初年度(1979/80年)10,000,000サイクルであり、2年度(1980/81年)24,000,000サイクル、3年度(1981/82年)36,000,000サイクルの予定である。

MINUTS OF DISCUSSIONS

ON

THE LOCAL CONDOM PRODUCTION PROJECT

IN THE REPUBLIC OF INDONESIA

BETWEEN

THE NATIONAL FAMILY PLANNING COORDINATING BOARD (BKKBN-NFPCB)

AND

THE JAPANESE STUDY TEAM

At the request of the Government of the Republic of Indonesia for assistance in establishing the local condom production project in **Banjaran, West Java** (hereinafter referred to as "the Project"), the Government of Japan through Japan International Cooperation Agency (JICA) has sent a study team (hereinafter referred to as "the Team") to conduct the feasibility study on the Project.

The Team headed by Mr. Itsuo Koyama carried out the field survey from June 8, 1981 to July 4, 1981, and had a series of discussions and exchange of views with the Indonesian authorities concerned and P.T. Kimia Farma on the Project, including visit to respective sites.

The National Family Planning Coordinating Board (hereinafter referred to as "the BKKBN") expressed the intention of the Government of Indonesia to establish a condom production factory in Indonesia with the assistance of the Japanese Government using Japanese Technology.

The Team submitted an Interim Report to the BKKBN after the completion of the field survey.

As a result of the discussions, both parties agreed to the following contents:

1. The proposed factory site is located in Banjaran, about 18 km south Bandung, west Java Province. There are three sites considered which at present still belong to private owners, but the Indonesian authorities concerned have confirmed to make one of the sites available within 1981.
2. The description of the three sites is attached hereto in Annex.

3. Specification of Condom

Specification of condom to be produced by the local factory is described as follows:

3.1. Dimension:

Length	not less than 17 cm
Width	49 - 52 mm
Wall thickness	0.05 ± 0.02 mm

3.2. Tensile Strength and Elongation at Break:

	<u>Before Aging</u>	<u>After Aging</u>
Tensile Strength	200 kg/cm ²	
Elongation at Break	600%	540%

3.3. Acceptable Quality Level

AQL 1.0

Number of Hole

Water Leakage Test Acceptance 4 Rejection 5
(out of 200 pieces per batch)

3.4. Coloured Condom

Coloured Condom such as pink, blue and green can be manufactured by adding colouring agents and modifying compounding process.

4. The Draft Final Report is to be submitted to the Indonesian authorities concerned in September 1981.

18 July, 1981

Jakarta, Indonesia


DR. P.P. SUMBUNG

Deputy for Administration and
Management

National Family Planning

Coordinating Board

(BKKBN-NFPGB)


MR. JUNSAKU KOIZUMI

Head of Industry Division

Mining & Industrial Planning and
Survey Department

Japan International Cooperation
Agency (JICA)

ANNEX

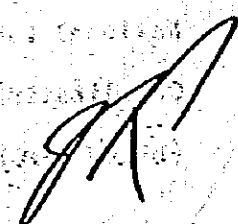

DESCRIPTION OF THE SITES

Site A : The space of Site A is about 20,000 m² surrounded by Lebakwangi Village (North), paper mill (South), Citalutuk river (West) and main street (East).

Site B : Total space of this site is about 500,000 m², of which P.T. Kimia Farma considers to obtain about 150,000 m². Site B is surrounded by Citalutuk river, Cisangkui river and main street.

Site C : Site C is larger than Site B and is located closer to the town of Banjaran. Site C is situated at the east side of the main street and on the right part of the Citalutuk river.

The Team found Site A to be the most desirable one among the three sites in Banjaran area, in view of appropriate space, transportation, supply and disposal of water.

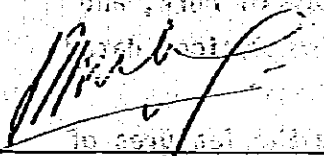


MINUTES OF MEETING

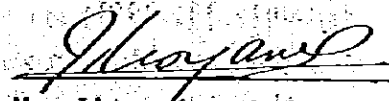
ON

DRAFT REPORT OF FEASIBILITY STUDY REPORT
FOR THE LOCAL CONDOM PRODUCTION PROJECT
IN THE REPUBLIC OF INDONESIA

OCTOBER 15, 1981.



Dr. P.P. Sumbung
Deputy for Administration
and Management
National Family Planning
Coordinating Board (BKKBN-NFPCB).



Mr. Itsuo Koyama
Team Leader
Japanese Feasibility Study
Team

S Jk

MINUTES OF MEETINGS

Jakarta, October , 1981

The Japanese study team for the Local Condom Production Project in the Republic of Indonesia (hereinafter referred to as "The Team"), sent by the Japan International Cooperation Agency (hereinafter referred to as "JICA"), presented to the National Family Planning Coordinating Board (hereinafter referred to as "BKKBN-NFPCB") a report entitled "DRAFT FINAL REPORT, THE FEASIBILITY STUDY ON THE LOCAL CONDOM PRODUCTION PROJECT IN THE REPUBLIC OF INDONESIA".

The following is a summary of the meetings and discussions:

1. Schedule of Meetings and Participants

The schedule of meetings and participants are listed in Annex-A and Annex-B, respectively.

2. Presentation of the Draft Final Report

2.1 The Team presented the Draft Final Report which has been prepared based on the objectives, the scope of work, and information described in the Minutes of Discussions dated July 18, 1981.

The presentation was made by highlighting the features of the study and results.

2.2 BKKBN-NFPCB and The Team exchanged views on the Draft Final Report.

- (1) BKKBN-NFPCB expressed satisfaction regarding the dedication and effort made to complete the study.
- (2) A preliminary review of the Draft Final Report indicates that the contents of the Report are objective.

(3) BKKBN-NFPCB commented as follows:

1. In principal, the content and the lay out of the Draft Final Report drawn up by The Team, is satisfactory and in accordance with the reality.
2. Basic changes are not necessary but certain completions and corrections of minor errors (typographical errors) and additional information are necessary.
3. Additional elaboration is required for the specification of the machinery components and their prices, furthermore, additional specification of the consultants fee which is included in the cost of technology transfer is necessary.
4. Concerning the land site, this has also been ascertained and the license from the local government is in process.
5. As regard raw material and latex, the Department of Agriculture has warranted that for the condom factory latex will be supplied in quantity and in quality as requested by The Team.

(4) THE TEAM commented as follows:

1. Standard Value of Latex for Condom Use (see Table IV-2).

Standard value of latex for condom indicates that much higher grade quality than ASTM and JIS (see Table IV-1) is required for the production of condom.

2. Merits of 3 lines Production System! With regards to the initial cost requirement, no difference exists between 2 lines system and 3 lines system.

JK

But from the technical point of view, the following items will be expected as merits of 3 lines system;

- a) Easy adjustment of production.
- b) Various types of condoms (coloured and shaped) can be simultaneously manufactured.
- c) High yield rate can be attained.
- d) Easy handling and maintenance.

3. The Initial Capital Requirement (see Table IV-1)

- With regard to Item No. 6 (Plant Machinery and Equipment), each cost estimate of Machinery, Boiler, Generator and Supply & Waste Water Treatment Facilities will be prepared as additional information and it will be sent to BKKBN-NFPCB after The Team return to Japan.
- Item No. 10 (Services) includes the "Transfer of Technology" and the cost of dispatch of after-care experts is estimated for 24 man months.

4. Conclusion of the Economic Evaluation (see Chapter 2-4, Part VIII).

The conclusion described in Chapter 2-4 is thought to be sufficient, because the details of economic effects of the Project are shown in previous sections (see Chapter 2-2; 2-3).

3. Final Report

The Draft Final Report will be considered as final after making the above mentioned modification and corrections of possible misspellings.

The Final Report, entitled "THE FEASIBILITY STUDY REPORT FOR THE LOCAL CONDOM PRODUCTION PROJECT IN THE REPUBLIC OF INDONESIA", will be submitted to BKKBN-NFPCB by the middle of November 1981.

Both parties agreed and accepted the above.

8 JK

Annex-A

SCHEDULE OF MEETINGS

<u>DATE</u>	<u>TIME</u>	<u>PLACE</u>
Oct. 14, 1981	09.00-14.00	BKKBN
Oct. 15, 1981	15.00-16.00	BKKBN

Annex-B

MEMBERS OF MEETINGS

DATE: October, , 1981

PLACE: BKKBN

<u>NAME</u>	<u>TITLE</u>	<u>NAME OF FIRM/ORGANIZATION</u>
1. Dr. P.P. Sumbung	Deputy for Administration & Management	BKKBN
2. Drs. Soenyoto	Bureau of Supply & Logistics	BKKBN
3. Dr. Mrs. Ratna Tjaja	Bureau of Planning	BKKBN
4. Mrs. Hartini Suhardjo	Secretariat	BKKBN
5. Mr. Widagdo Budidarmo		Kimia Farma
6. Mr. R. Budhipramana		Kimia Farma
7. Mr. Dwipayana Saraswadi		Kimia Farma
8. Mr. Itsuo Koyama	Head, The Team	Sagami Rubber Industries Co., Ltd.
9. Mr. Teruo Kashiwagi	Plant Planning	Sagami Rubber Industries Co., Ltd.
10. Ms. Machiko Watanabe	Demand Estimation	International Development Center of Japan
11. Mr. Toshio Namai	Coordinator	JICA, Tokyo

INTERIM REPORT

THE FEASIBILITY STUDY

ON

THE LOCAL CONDOM PRODUCTION PROJECT
IN THE REPUBLIC OF INDONESIA

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2. BACKGROUND	2.1
3. OBJECTIVES	3.1
4. SCOPE	4.1
5. METHODOLOGY	5.1
6. MARKET ANALYSIS	6.1
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8. FINANCIAL ANALYSIS	8.1
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Completed on July 4, 1981

THE STUDY TEAM

JAPAN INTERNATIONAL COOPERATION AGENCY

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I. INTRODUCTION

In accordance with the scope of work which was agreed between the Japanese preliminary survey team and the National Family Planning Co-ordinating Board (BKKBN-NFPCB) on 23rd March, 1981, Japan International Cooperation Agency (JICA) has undertaken a feasibility study on the local condom production project (hereinafter referred to as "The Project") in the Republic of Indonesia.

The purpose of The Study is to investigate the feasibility of The Project exchanging views with authorities concerned in the Republic of Indonesia, carrying out field investigation and analyzing The Project from technical, economic and other points of view based on the information obtained.

During the stay in Indonesia, the Study Team carried out:

- a. Discussions about the Project with the BKKBN and P.T. KIMIA FARMA as well as other ministries and agencies concerned;
- b. Visits to and interviews with international agencies such as The World Bank, UNFPA, UNICEF, USAID and local foundations.
- c. Visits to or interviews with relevant industries in Indonesia.
- d. Collection and review of data and information which are required for the feasibility study.

In View of the necessity to check quality and storage condition of the best available latex in Indonesia, two

expert members in latex technology visited Medan which was not scheduled originally.

Based on the findings as well as data and information collected through the activities mentioned earlier, the Study Team will accomplish the feasibility study after its return to Japan.

This Interim Report is to present a brief summary of the Study Team's findings and/or observations and major elements which will be used as the basis for The Study.

Full assistance and cooperation extended by the Indonesian Counterpart, BKKBN and P.T. KIMIA FARMA as well as various authorities of the Government of the Republic of Indonesia enabled the Study Team to perform its duties with successful results. The Study Team acknowledges, and takes this opportunity to express its gratitude for such assistance and cooperation of the Indonesian Counterpart.

II. BACKGROUND

Rapid expansion of population has been creating serious economic and social problems in Indonesia. Population control is considered to be one of the necessary conditions for economic development. Hence, the Government of Indonesia has adopted the national program for family planning to reduce the birth rate and there-by to slow down population growth.

The demographic objectives stated in the Five Year Development Plan (1979 - 1984) is to reduce the 1971 level of fertility by 50 percent by the year 2000, which however, this has been advanced by ten years to 1990 by Presidential instruction. In order to achieve this goal, around 17 million out of 27.7 million eligible couples should be active contraceptive users in 1990. With the expansion of the National family planning program, the demand for condoms will increase rapidly as one of the most convenient contraceptives especially at the village level. To meet the growing need of condoms, the Government of the Republic of Indonesia considers the necessity of condom production to substitute the overseas purchase of this contraceptive.

Under the circumstances, the Government of the Republic of Indonesia requested the cooperation of the Japanese Government in carrying out a feasibility study on The Project to establish a condom manufacturing plant in the Republic of Indonesia.

III. FINDINGS AND OBSERVATIONS OF THE STUDY TEAM

III.1. Demand of Condom and Plant Capacity

III.1.1. Demand of Condom

In spite of the unstable supply conditions of condom and the tendency of the current users to utilize more pill and IUD during the last few years as shown by the table of the projected current users by method for the years 1981/82 through 1990/1991 (annex), the annual percentage of condom users from the beginning of the programme appears to recur steady around 5% of the total annual current users. It is therefore expected that for the years to come this percentage will be used for calculating the expected number of condom users from the annual current users which every year are anticipated to be increasing.

From the logistic point of view and also to warrant a ready availability of stocks at the lowest distribution point, it is essential that during a certain year an operation country stock of at least twice the quantity of annual condom usage should be maintained. Taking into account the above data, and the average quantity of condoms used by a customer during a year, to be one gross, the projected demand for the years starting with the fiscal year 1981/82, is shown in the following table.

CONDOM STOCKS IN INDONESIA
1981/'82 - 1990/'91

FISCAL YEAR	CURRENT USERS (C.U)	CONDOM COUNTRY (5% of C.U.)	EXPECTED OPENING STOCKS	ADDITIONAL YEARLY REQUIREMENT
1981/82	8,400,000	420,000	433,000 gross	407,000 gross
1982/83	9,400,000	470,000	420,000 gross	520,000 gross
1983/84	10,200,000	510,000	470,000 gross	550,000 gross
1984/85	11,200,000	560,000	510,000 gross	610,000 gross
1985/86	12,200,000	610,000	560,000 gross	660,000 gross
1986/87	13,000,000	650,000	610,000 gross	690,000 gross
1987/88	14,000,000	700,000	650,000 gross	750,000 gross
1988/89	15,000,000	750,000	700,000 gross	800,000 gross
1989/90	16,000,000	800,000	750,000 gross	850,000 gross
1990/91	17,000,000	850,000	800,000 gross	900,000 gross

6,737,000 gross

N O T E : 1) Each acceptor used 12 pieces condom per month.
2) Stock Formula : 3, 3, 6, 6, 3, 3.

BKKBN

26 June 1981.

PROJECTED CURRENT USER BY METHODS

1981/1982 - 1990/1991

FISCAL YEAR	TOTAL C.U.		IUD		PILL		CONDOM		OTHERS	
	%	N	%	N	%	N	%	N	%	N
1981/82	31	2,600,000	58	4,900,000	5	420,000	6	480,000		
1982/83	32	3,000,000	56	5,300,000	5	470,000	7	630,000		
1983/84	33	3,400,000	54	5,600,000	5	510,000	8	790,000		
1984/85	35	3,800,000	52	5,800,000	5	560,000	9	1,040,000		
1985/86	35	4,300,000	50	6,100,000	5	610,000	10	1,090,000		
1986/87	36	4,700,000	48	6,300,000	5	650,000	11	1,350,000		
1987/88	37	5,200,000	46	6,500,000	5	700,000	12	1,600,000		
1988/89	38	5,700,000	44	6,600,000	5	750,000	13	1,950,000		
1989/90	39	6,200,000	42	6,700,000	5	800,000	14	2,300,000		
1990/91	40	6,700,000	40	6,800,000	5	850,000	15	2,650,000		

BKKBN

26 June 1981

The Study Team confirms these figures as reasonable as conservative estimates owing to the following reasons :

1. Actual percentage of condom users at present is 5.6% but for the calculations for the yearly requirement is used the 5% instead.
2. According to the latest computerised data, April 1981, the use of condom in Yogyakarta province shares 33.3%, North Sumatra 14.9%, South Sumatra 9.9, Central Kalimantan 9.1%, Timor Timur 13.1%, Riau 12.8%, Irian Jaya 9.6%, Centra Java 9.9%.
3. It is expected that in future more men will participate as acceptors in the family planning program.
4. The use of condom will increase proportionately to higher educational background.

III.1.2. Distribution System

Distribution system for contraceptives are well established by the BKKBN from central down to the village level. Oral contraceptives produced by P.T. KIMIA FARMA in Bandung are delivered to the Provincial headquarters directly.

The number of clinics amounts to 5,609 in March 1981 consisting of :

Ministry of Health	:	4652
Armed Force	:	401
Other Ministries	:	176
Private Clinics	:	380

The number of family planning field workers are 7,059 and the frequency of Mobile Medical Team count for 261,987 times in 1980/81.

The distributions of contraceptives are at subdistrict and village level carried by Health Centres, family planning clinics, field workers, mobile medical teams and VDCs.

III.1.3. Production Capacity

According to present working day set by P.T. KIMIA FARMA who are Government owned enterprise entrusted to implement this project as well as Oral Pill project are 5 days/week and 240 days annually; Also labour law provides 40 hours working time a week.

Therefore, the plant should be designed in accordance with condom requirement as stated in III.1.1. However, in view of rather greater demand forecast planned by BKKBN after 1985, like 900,000 in 90/91, working time should be changed from 40 hr./week to 42 hr./week after some stage by adopting, 3 shift basis per day with 4 working team so that a team may take two continuous holidays after 6 working days, thus enabling production capacity of 900,000 gross can be maintained annually. This 3 shift basis are adopted in textile industry in Indonesia and P.T. KIMIA FARMA also expressed its adoption in condom factory.

The Study Team will design automatic continuous manufacturing equipment in 3 lines together with all necessary auxiliary equipment. The details and precise description shall be stated in the subsequent report.

III.2. Raw Materials

III.2.1. Latex

III.2.1.A Latex in Java

There are two latex refineries, P.T. PERKEBUNAN XI and XII in Java Islands. Samples of these refineries were tested. Both analysis data show too low mechanical stability and too high V.F.A. No. (Volatile Fatty Acid) which are not suitable for the production of condom. Further more daily quality control system does not exist at present and the Study Team was also unable to obtain the monthly or past quality level records.

III.2.1.B Latex in Medan

The Study on refineries No. PTP II, III & V was performed. As output of factories No. II & III are not large enough, the latex refined in these two factories are brought to Belawan Port where latex refined in factory No. V was also brought and contained in the same latex tank for exportation. However, majority of latex are refined in P.T.P. No. V. The Study Team is of the opinion that P.T.P. No. V has the most bright possibility among other refineries in Medan judging from monthly analysis data.

Then, detail study on P.T.P. V was made. As a result ;

- a. Importation of new drums may be necessary for transportation.
- b. Filling facility to drum in factory of P.T.P. V is required.
- c. Analysis of Mechanical Stability and Viscosity should be performed in P.T.P. V.

The quality of latex will change according to method and time of storage. To grasp its condition, it takes sometime. Considering these delicate fact of latex in mind, special quality control system for condom production should be completed in one year time.

After completion of the factory, if no local high quality latex is available, foreign latex used by the experienced condom manufacturer should be imported for about one year period provided that during the said term, the local refinery can fulfill the standard of latex required.

III.2.2. Auxiliary Chemicals

Only Zinc Oxide can be obtained locally as a result of thorough market survey. However, following auxiliary chemicals if unavailable locally should be imported.

- Sulpher
- Accelerator
- Stabilizer

- Anti Oxidant
- Dispersing Agent
- Stripping Agent
- Lubricant

III.2.3. Packaging Material

The following materials shall be necessary:

- Polyethylene laminated aluminium tape
- Printed paper gross box
- Carton box
- Sealing tapes

These packaging materials are found to be obtainable locally.

III.3. Factory Site

Proposed factory sites by P.T. KIMIA FARMA are located in Banjaran about 18 km. south from Bandung and all of them are designated industrial zone by local authority, though they are rice fields at the present moment.

P.T. KIMIA FARMA had two sites in their mind. The Study Team made a survey three sites, adding one more site which Preliminary Survey Team had observed a few months ago.

Site A : The space of this Site A is about 20,000 m² surrounded by Lebakwangi Village (North), paper mill (South), Citalutuk river (West) and main street (East).

The Study Team finds Site A is the most desirable among the three sites in Banjaran area because of appropriate space, transportation, supply and disposal of water.

Site B : P.T. KIMIA FARMA is interested in this site in view of availability of sufficient water for their other future projects.

Total space of this site is about 500,000 m²; but P.T. KIMIA FARMA is willing to obtain about 150,000 m² of this space. Site B is surrounded by Citalutuk river, Cisangkui river and main street. P.T. KIMIA FARMA will find out the possibility with regard to the availability of Site A. In case of the selections of Site B, approximately 15,000 m² will be assigned to condom factory.

Site C : Site C is larger than site B and is located much closer to the town of Banjaran. Site C is situated at the east side of the main street.

Comments on Site B & C :

For both site B & C, an entrance road of 20 meter width would be constructed. Also construction of water supply piping to factory is essential.

Should these construction be made properly, sites B and C will be utilized for condom factory.

III.4. Electricity, Water, Climate, Transportation, and Man-Power

III.4.1. Electricity

In order to solve question of stoppage of electricity, it is essential to set up generator. According to P.L.N. (Electricity Supply Office), installation of generator can be approved as emergency supply source of electricity.

General Supply of electricity by P.L.N. for industrial use is :

High Voltage; 20 KV, 3 Phase (3 line system), 50 Hz.

Low Voltage; Single Phase 220V, 3 Phase, 380 V (4 line system)

III.4.2. Water

In principle, water from the river will be utilized, but considering long term dry season, well water will be simultaneously used. Consumption of water is maximum 13 tons/Hr. Water treatment facilities for supply and disposal shall be required.

III.4.3. Steam

Imported boiler is required. The capacity of boiler will be 1200 kg/hr. Storage tank for solar oil is necessary.

III.4.4. Climate

- Temperature, 20 - 30°C / throughout year
- Humidity, 70 - 100% / Do
- Thunder, frequently
(Protector against thunder required).
- Wind, sudden gust of wind exist.

III.4.5. Transportation

III.4.5.1 Transportation of Plant

There are four routes from Jakarta to Bandung. Each route has limitation of weight and measurement. Maximum measurement of limit is as follows:

- | | | |
|----------|--------|-----------------|
| - Height | 2.65 m | (Size of Cargo) |
| - Width | 2.5 m | Do |
| - Length | 6.0 m | Do |

III.4.5.2 Transportation of latex from Medan

In case of use of latex produced and refined in Medan, latex contained in drum will be delivered to Belawan Port by train or truck, Transportation from Belawan port to Jakarta shall be made by steamer, then carried by truck from Jakarta to Banjaran.

III.4.6. Man-Power

It is said that about 70% of textile industry is located in Bandung area. The Study Team foresee no problem in respect of number of workers.

III.5. Technical Aspects

At the time of actual project implementation in 1983/84, scheduled production capacity is estimated as 550,000 gross per year and 900,000 gross in 1990/91.

Required machinery equipment, utility, building, civil works and technical services are as follows:

III.5.1.1 Main Plant

- Compounding equipment
- Fully automated continuous dipping plant
- Automatic sealing machines
- Automatic pin-hole testing machines
- Laboratory testing apparatus
- Maintenance tools
- Spare-parts

III.5.1.2 Utility

- Electric supply receiver
- Electric Generator
- Boiler

III.5.1.3 Building

- Factory with lighting
- Office
- Canteen & Welfare
- Guard House

III.5.1.4 Warehouse

- Fence & Gate

III.5.1.4 Civil Works

- Leveling of land
- Water supply piping
- Water drainage
- Road

III.5.1.5 Others

- Factory furniture and fixture
- Office furniture and fixture
- Vehicle

III.5.2 Technical Services

The manufacturing technique of latex is delicate since it involved high polymer chemistry, and required experience in tropical area.

At the early stage, technical services are required from experienced manufacturers. The Study Team considers that Technical Services will require 5 - 10 years.

III.5.2.1 Training of Indonesian experts

The training by actual undertaker/supplier of plant and its technical know-how designates shall be essential for about three months period by three technicians.

III.5.2.2 Technical Services by experienced manufacturers

Technical Services by experienced manufacturers shall be required in various aspects, but the most important point at the initial stage shall be research and improvement of Indonesian local latex.

III.6 Implementing Schedule of the Project (Ref.: Annex 4)

Starting date of the project shall be defined as the day when plant supplier and purchaser sign an agreement. It would require 19 months from the contract agreement to start test operation of the plant.

Purchase of land and leveling of land must be accomplished 4 months before contract be signed between purchaser and supplier.

III.7 Specification of Condom

Specification of condom to be produced from the local factory is described as follows. Besides that, coloured condom such as pink, blue and green can be manufactured by adding colouring agents and modifying compounding process.

III.7.1 Dimension

Length	not less than 17 cm
Width	49 - 52 m/m.
Wall thickness	0.05 ± 0.02 m/m.

III.7.2 Tensile Strength and Elongation at Break

	<u>Before Aging</u>	<u>After Aging</u>
Tensile Strength	200 kg/cm ²	
Elongation at Break	600%	540%

III.7.3 Acceptable Quality Level

AQL 1.0

Water leakage test number of holes
Acceptance 4 Rejection 5
(out of 200 pièces per batch)

III.8 Benefit Cost Analysis of the Proposed Project

III.8.1 Economic Feasibility

Based on our tentative cost data and provisional project design, rough estimation of the economic feasibility of the Project was carried out. Method used in this estimation is discount cash flow analysis (UNIDO Method). Major assumption in the estimation are as follows:

III.8.2 Benefit of the Project

Considering the economic benefit of family planning activities being intangible and the government policy on family planning having been already fixed, economic benefit of the project should be measured against import price (CIF) of currently imported products. The difficulty, however, lies in the fact that unit cost (CIF) figures of imported products vary considerably from about \$ 3 to over \$ 5, depending on the timing of import, procuring agencies, suppliers, import quantities and type and/or quality of the products.

We examined carefully the statistical import data from various sources and concluded that about \$ 4.0 - \$ 4.5 / gross (CIF, 1981 price) would be the most

proper estimate. The reason for this is that: although some figures are much less than \$ 4.0, it should be unrealistic to expect that such low priced products be available continuously in the future; because we could safely guess that these products are sold at dumping prices covering only marginal costs without covering investment costs; thus raising the capacity utilization rate. However, the prices more than, say \$ 5/gross would be too high, considering in particular that fancy packaging are not required.

III.8.3 Production Schedule

The following production schedule is assumed:

0 year; all investment carried out
1st year; 550,000 gross
2nd year; 610,000 gross
3rd year to 15th year (end of the project life);
660,000 gross - 1,000,000 gross.

III.8.4 Economic Internal Rate of Return

In view of the complicated manufacturing processing involved in the production of condoms, technical services for the first few years are assumed.

With the above assumptions as well as our tentative cost data gathered during this field survey, economic internal rate of return of the proposed project is estimated to be a quite feasible figure of about 10%.

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Drs. Utarto
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P.T. KIMIA FARMA

Drs. R. Budhi Pramana
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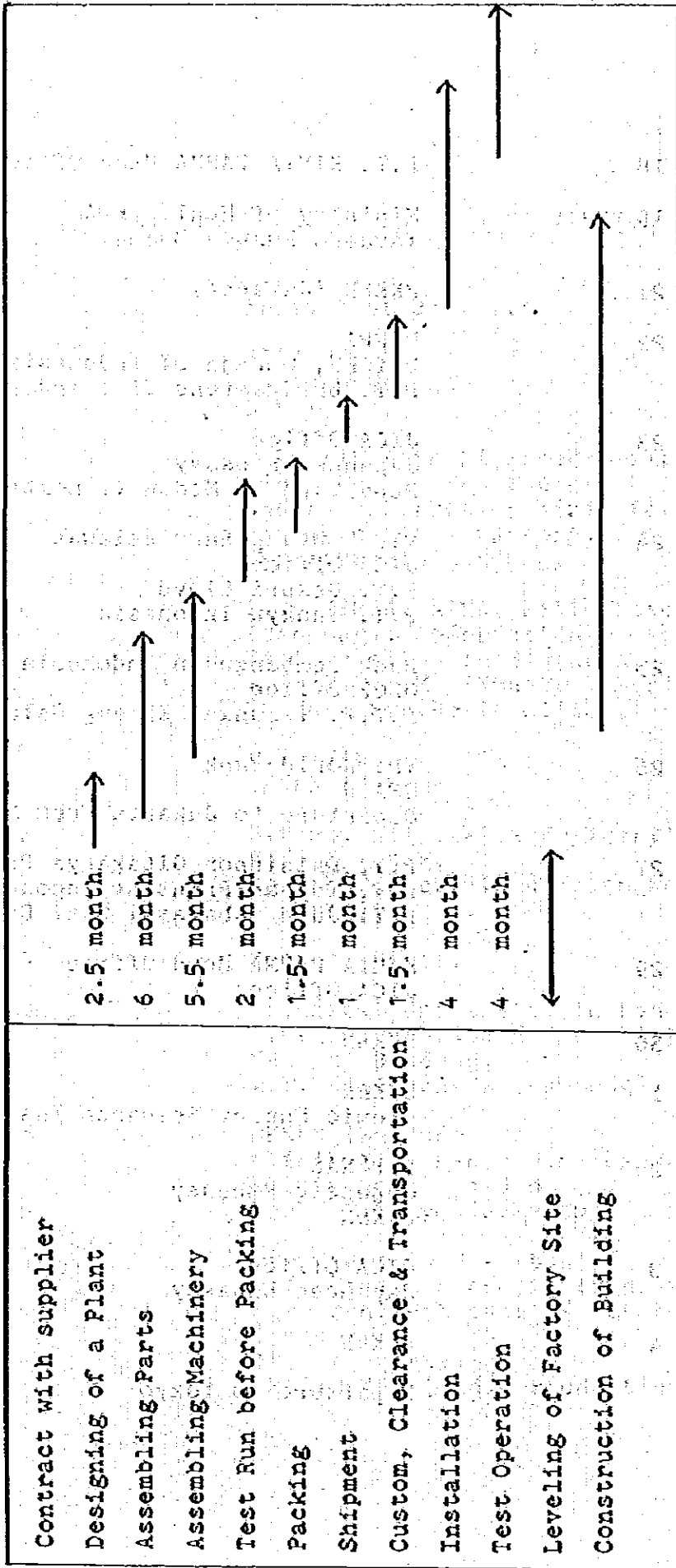
LIST OF ORGANIZATION AND PLACES VISITED

- June 8 Arrival at Jarkarta
- June 9 JICA Office
Japanese Embassy
BKKBN
- June 10 P.T. KIMIA FARMA, Head Office
Kimia Farma, New Factory Building
under construction Kimia Farma,
Pharmaceutical Factory.
Departure to Bandung.
- June 11 P.T. KIMIA FARMA, Pill Factory
(Bandung). Observation of two
factory sites in Banjaran.
P.T. K.T.S.M. (Kanobo Tomen
Sandang Synthetic Mills).
- June 12 P.T. TANABE-ABADI
BKKBN (Jakarta)
- June 13 PTP No. XII (Latex Refinery)
P.T. K.T.S.M.
Health Center, (Kecamatan Koja,
Jakarta).
- June 14 Factory Sites.
- June 15 Technical University in Bandung
P.L.N. (Perusahaan Umum Listrik
Negera). Bandung.
P.T. KIMIA FARMA (Bandung).
- June 16 BKKBN (Bandung)
Klinik K.B. Pansundan (Bandung)
Klinik Moch. Ramdan
Bank of Tokyo (Jakarta).
- June 17 Departure to Jakarta
P.T. Eisai Indonesia (Puncak)
Research Institute of Estate Corpos.
(Bogor).
IPPF (Jakarta)
(MPC/BKKBN (Media Production Center)).

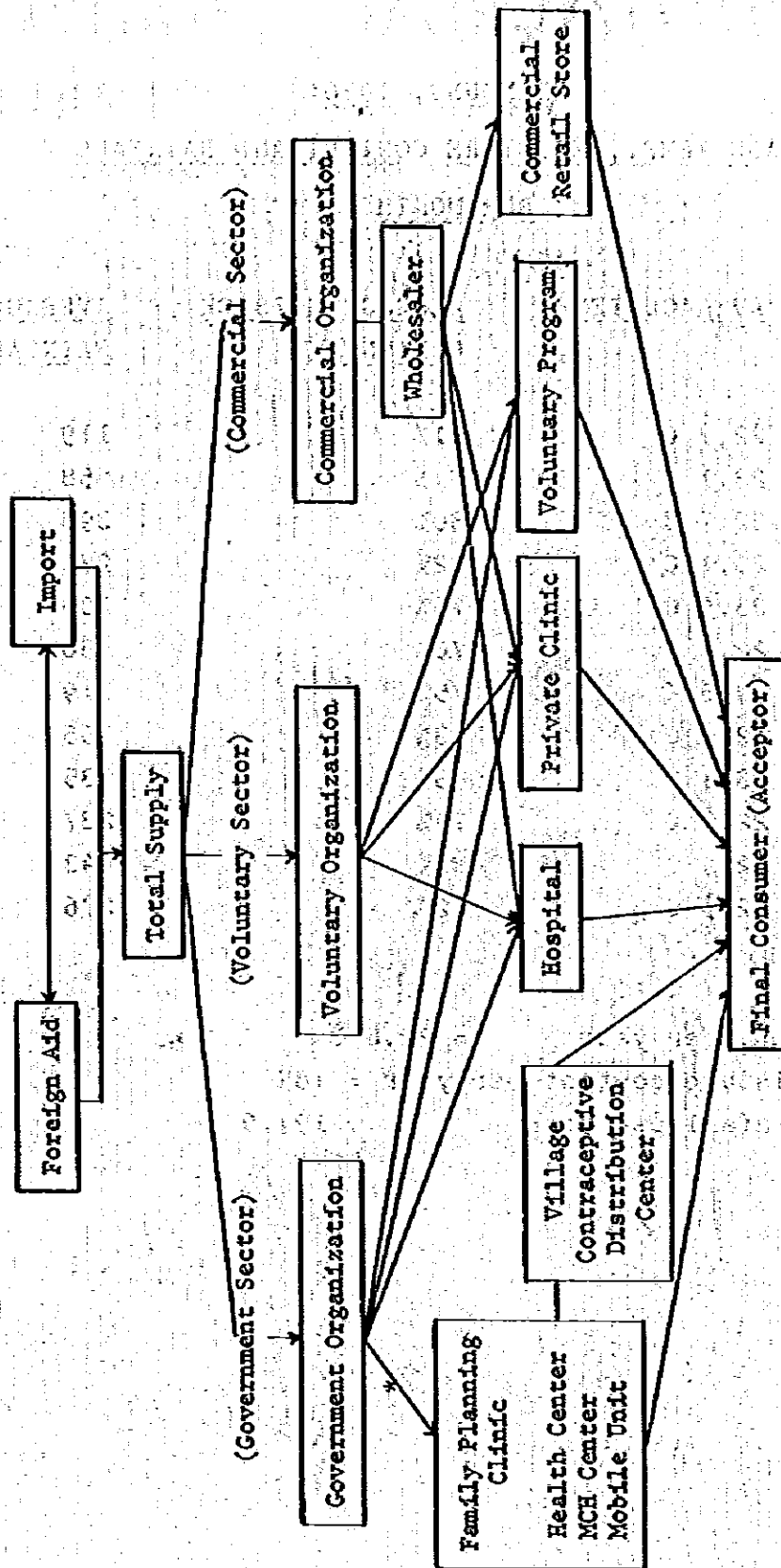
June 18	P.T. KIMIA FARMA Head Office.
June 19	Ministry of Health FDA Yayasan Kusuma Buana.
June 21	BKKBN (Jakarta)
June 22	UNFPA UNICEF, Gereja DI Indonesia (DGI) P.T. Bridgestone Tire Indonesia.
June 23	JICA Office Japanese Embassy Departure to Medan (2 members).
June 24	PTP V Utung Baru Belawan JICA Office P.T. Gesuri Lloyd P.T. Sanky Indonesia
June 25	Bank Pembangunan Indonesia (BAPINDO) OECP Office P.T.P. V Sungai Karang Galang.
June 26	The World Bank USAID Departure to Jakarta from Medan.
June 27	P.T. Dainippon Gitsakarya Printing P.T. Toppan Printing Indonesia P.T. Jaya Ohbayashi Gumi Corporation
June 29	KIMIA FARMA Head Office JICA Office
June 30	BKKBN
July 1	BKKBN Atomic Energy Research Institute
July 2	BAPENAS Japanese Embassy BKKBN
July 3	JICA Office Japanese Embassy
July 4	BKKBN Departure to Tokyo

SCHEDULE OF PLANT CONSTRUCTION

MONTH 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21



Conceptual Structure of Condom Distribution Channel



* more than 90% government supplies go through this channel.

BANDUNG, 1980AVERAGE TEMP., MOISTURE CONTENT AND RAINFALLPER MONTH

<u>MONTH</u>	<u>AVERAGE TEMP.</u>	<u>AVERAGE MOISURE CONTENT</u>	<u>AVERAGE RAINFALL</u>
JAN	22,7 C	81%	119
FEB	23.1 C	77%	58
MARCH	22.7 C	80%	393
APRIL	23.1 C	82%	274
MAY	23.4 C	76%	109
JUNE	22.9 C	76%	86
JULY	22.6 C	75%	119
AUGUST	22.2 C	73%	65
SEPT	23.1 C	73%	135
OCT	22.9 C	79%	287
NOV	22.9 C	82%	443
DEC	22.5 C	82%	276

Average temp. per year = 22.8 C

Average moisture content per year = 78%

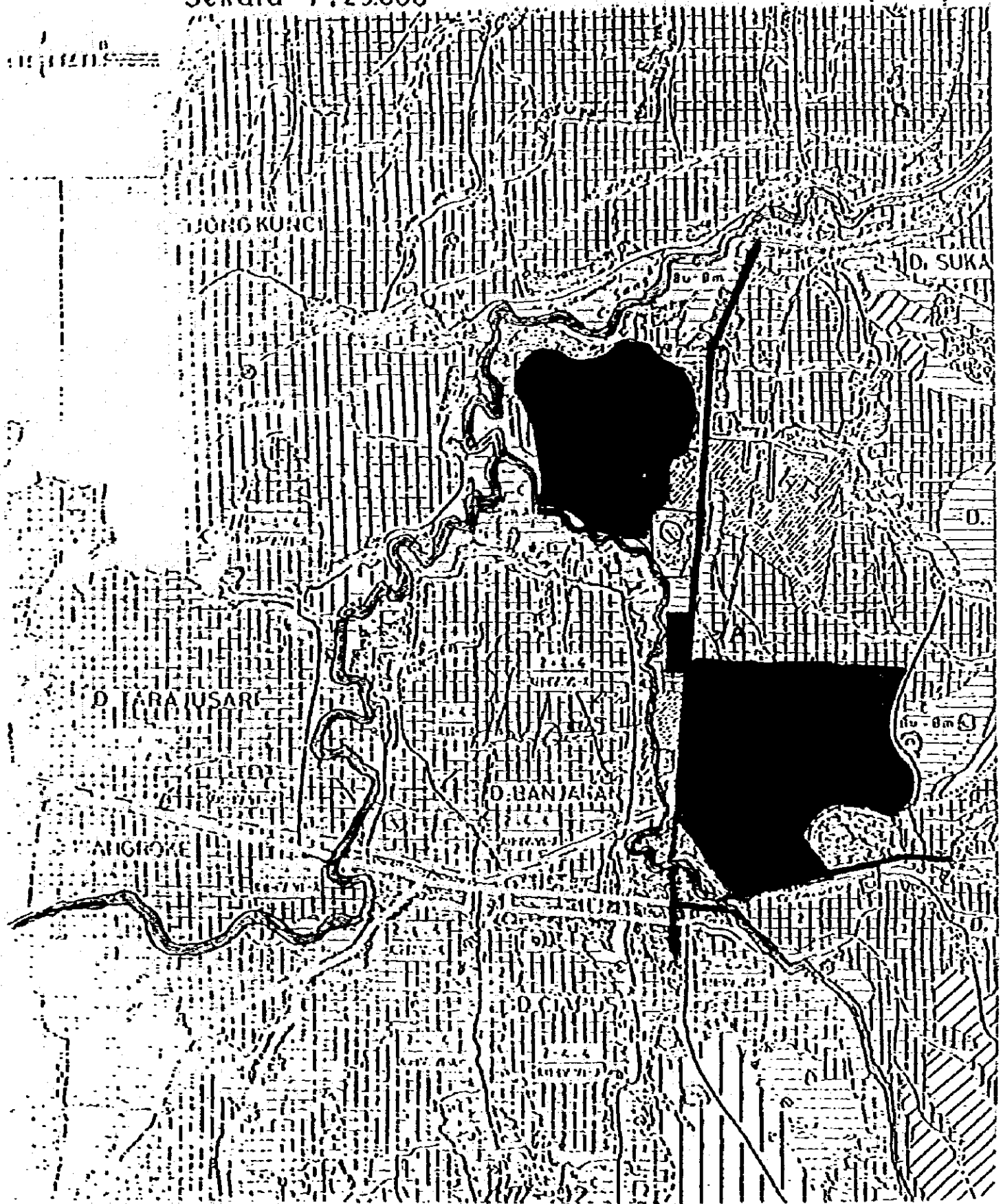
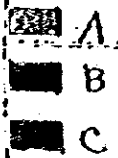
Average rainfall per year = 197.0

TA PENGGUNAAN TANAH CAMATAN BANJARAN

KABUPATEN BANDUNG

Sekala 1:25.000

付録: 7



JICA

