

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

SUMMARY

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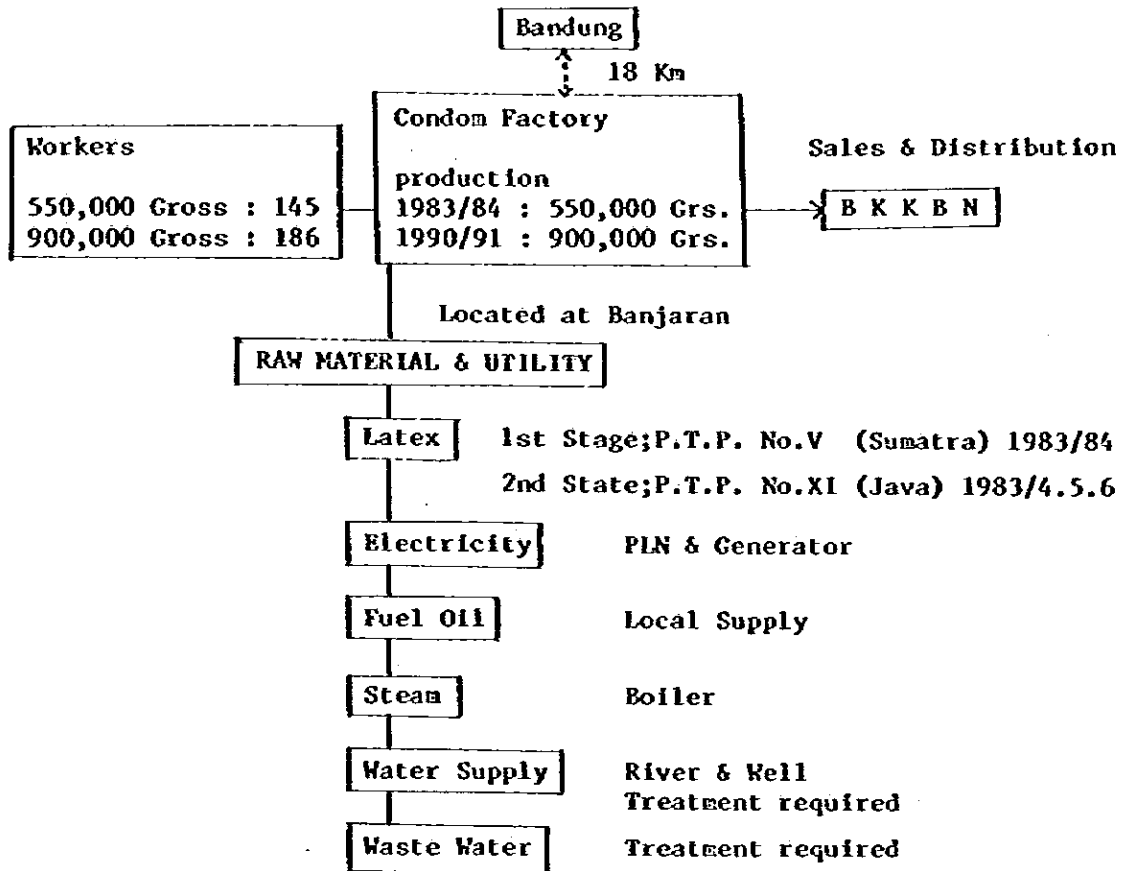
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JAPAN INTERNATIONAL COOPERATION AGENCY

国際協力事業団		
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Outline of Condome Project



Preamble: Contract to be made in 1981 fiscal year.
 Commencement of Designing 1981/82.
 Mechanical completion of factory 1983/84.
 Starting of trial operation 1983/84.

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1. OUTLINE OF THE PROJECT

1. Production Capacity

1983/84	2,300 gross/day	550,000 gross/year
1990/91	2,730 gross/day	900,000 gross/year

2. Natural Rubber Latex

For the production of condoms, there is a need to use latex of the highest quality. Sumatran latex should be used at the first stage and efforts to develop Javanese latex should be started as soon as possible.

3. Plant Site

Plant site has been decided as 15,000 m² out of 1 million m² rice field at Banjaran located 18 km south of Bandung.

4. Sales of the Products

All the products to be manufactured as scheduled by BKKBN will be purchased by BKKBN and distributed through its network free of charge.

The Government of Indonesia intends to determine the price of condom taking into account the price at which the U.N. or other donor agencies purchase in international market.

5. Management of the Venture

The government owned pharmaceutical company, P.T. Kimia Farma will be engaged in the operation of the plant as one division of its organization.

II. BACKGROUND FOR NECESSITY OF CONDOMS

1. Population in Indonesia:	Population	147 million
	Increase rate	2.32%
	In world	5th largest
	Java, Bali	64%
		(Total area of 7%)

2. The National Family Planning Program

The number of current users reached 7.79 million in 1980 since 1970. The program target for current users in 1990/91 is set at 16.82 million.

3. The Role of Condoms in the Program

18.9% and 18.1% of new acceptors chose condom as contraceptive in 1974/75 and 1975/76 when condoms were substantially supplied with USAID assistance. The use of condom is estimated to be 5% from 1980/81 - 1990/91.

III. STUDY OF DEMAND FORECAST AND CONDOM DISTRIBUTION SYSTEM

1. Demand Forecast

The number of condoms to be used by acceptors per year is estimated at 144 pieces (1 gross). However, the feasibility study team assumed more realistic premise that actual acceptors (6% of total acceptors) will use 120 pieces of condom per year. Thus, quantity of condom required will be 550,000 gross in 1983/84 and 900,000 gross in 1990/91.

2. Distribution System

The condoms will be distributed through BKKBN network in province and regency. Under the provincial and regency BKKBN, there are family planning clinics, village contraceptive distribution centers (VCDC), mobile medical teams, field workers and sub-VCDC (Acceptors group).

IV. RAW MATERIALS' STUDY

1. Natural Rubber Latex

BKKBN has decided to propose the Ministry of Agriculture to improve quality of latex being refined in P.T.P. V in Sumatra and P.T.P. XI in Java as a result of additional study.

2. Compounding Chemicals and Other Materials

Most of those chemical and materials are not obtainable locally and must be imported.

3. Packing Materials

Local packing materials are accessible and usable.

V. STUDY OF TECHNICAL ASPECTS RELATED TO CONDOM PRODUCTION

1. Site Condition of Proposed Site C

No problems as to supply of water and labour force can be foreseen, though quality of water and electric supply is questionable. Therefore, installation of generator and water treatment equipment shall be essential.

2. Infrastructure and Utilities

2-1 Road

No serious problem can be expected.

2-2 Electric Power Supply

Although electric supply by P.L.N. is assured, installation of generator will be essential due to the existence of supply stoppage.

2-3 Supply of Fuel Oil

There is no problem regarding supply of fuel oil. The condom plant will need a stockpile of fuel oil sufficient for a period of one month.

2-4 Water Supply

Condom plant will consume an estimated 14 t of water per hour. The river and well water must be treated with purification facility.

2-5 Waste Water Treatment

The waste water from the plant must be treated before disposal in order to meet Indonesian Standard for Waste Water.

2-6 Consumption of Energy Sources

The annual consumption of energy sources for the production of 600,000 gross condoms are described as follows:

Vapour consumption	900-1,200 kg/H
Fuel oil consumption	80- 110 l/H (MDF)
	90- 120 l/H (Solar Oil)
Electric power consumption	300- 350 kWh
Water supply	12- 16 t/H

3. Major Base Factor Taken for Examination and Conceptual Design of Facilities for the Condom Production Plant

3-1 Required Condom Production

1983/84	550,000 gross
1984/85	610,000 gross
1985/86	660,000 gross
1986/87	690,000 gross
1987/88	750,000 gross
1988/89	800,000 gross
1989/90	850,000 gross
1990/91	900,000 gross

3-2 Specification of Condom, Natural Rubber Latex and Packing Material

(A) Specification of condom

Dimension :

Length	: Not less than 17 cm
Width	: 49-52 mm
Thickness	: 0.05 0.02 mm

Physical Properties :

Tensile strength before aging	: 600%
Tensile strength after aging	: 540%
Elongation at break	: 200 kg/cm
Water leakage test	: AQL 1.0%
Bursting volume	: Not less than 251 (Average)

(B) Specification of natural rubber latex

Total Solid Content, Dry Rubber Content, Difference, a)-b), Total Alkalinity Percent, Viscosity, KOH No., MST, pH value, VFA No. shall be important factor for the production of condom.

4. Conceptual Design and Plan of Facilities and Related Work for the Condom Production Plant

(A) Production facility

Compounding equipment	: Vulcanizing capacity of 1,200 t/day, Sulphur vulcanizing method
Moulding machine	: Full automatic type; 3 lines Electric heater drying system
Pinhole testing machine	: Automatic type with feeder; 4 lines, Wet system detective type
Packing machine	: Automatic type with feeder; 8 sets, Oblong type

(B) Utility facility

Electric receiver	: 500 kVA
Generator capacity	: 500 kVA (3 sets of capacity 250 kVA each)
Boiler capacity	: 1,200 kg/H (Pressure 6-8 kg/cm ²)

Supply water treatment facility

: Concentration and precipitation facility	30 m ³
Filtering apparatus	25 m ³
Water softner	1.5 m ³ /H
Démineralizer	0.2 m ³ /H

Waste water treatment facility

: Neutralizing concentration and precipitation apparatus	30 m ³
Filtering apparatus	25 m ³

5. Production Process and Technology

Condom production by the continuous dipping method needs particular technique in all the phase of manufacturing process. Processing technology under high-temperature conditions shall be required.

6. Project Implementation and Plant Operation

6-1 Organization for Implementation of This Project

Executing agency of the Project is BKKBN and implementing agency is the Government owned pharmaceutical company, P.T. Kimia Farma.

6-2 Major Tasks which must be Performed by Indonesian Counterpart up to the Time of Delivering Plant Equipment

On the basis of prerequisites, leveling of the land, construction of factory building, access road, water supply and waste water treatment facility and necessary piping and wiring works in the factory shall be completed by P.T. Kimia Farma before the arrival of machinery and equipment to the factory.

6-3 Implementation Schedule

Commencement of Designing	1981/82
Mechanical Completion of Factory	1983/84
Starting of Trial Operation	1983/84

6-4 Organization for Plant Operation and Manpower Planning

<u>Production capacity</u>	<u>600,000 gross/year</u>	<u>900,000 gross/year</u>
Executives	4	4
Middle class manager	29	31
Clerk and factory workers	112	151
	145	186

7. Technical Assistance Services

The terms of assistance services is as follows:

(A) Technical assistance in Indonesia

- a) Technical assistance services for a period of additional one year after the transfer of plant machinery and equipments.
- b) Technical assistance services related to operation and maintenance for a period of at least 3-5 years following the starting up of the plant.

(B) Overseas training

It is considered to provide overseas training for Indonesian engineers.

VI. CAPITAL REQUIREMENT AND FINANCING PLAN

1. Capital Requirement

The total capital requirements are estimated as follows:

Foreign Currency Portion (000)	Domestic Currency Portion (000)	Total (000)
¥2,248,742 Rp6,184,042	Rp1,310,038	Rp7,494,080

Above calculation is based on an exchange rate of US\$1 = ¥255 = Rp620.

2. Financing Plan

Long term loan: 15 years including grace period of 5-7 years with annual interest rate of 3-5%.

Local portion of the capital requirement is to be covered by equity capital. The working capital is to be financed by short-term loan from state banks with annual interest rate of 13.5%.

VII. FINANCIAL ANALYSIS

Under the assumptions that the purchase price of condom is US\$4.0-4.5 per gross and the annual interest rate for long-term loan is 3.0-5.0%, the internal financial rate of return for the project is estimated at 9.40-12.88% before tax and 6.84-10.28% after tax. Therefore, if long-term loans are available at an interest rate of 3.0- 5.0%, the project is considered financially feasible.

VIII. ECONOMIC EVALUATION

The internal economic rate of return for the project is computed at 8.59-12.18%. Considering its contribution to the national family planning program, foreign exchange saving effect by import substitution of condom, and other conceivable benefits, the project is considered justifiable and desirable for the national economy.

CONCLUSION

According to the result of the study, the project of establishing condom production plant in Banjaran on the outskirts of Bandung using domestic latex refined in Sumatra in the first stage and refined in Java in the second stage is considered financially and economically feasible.

RECOMMENDATIONS

The following recommendations are made as being essential to insure the success of the project.

1. The production of condom needs specific techniques incomparable to those for other manufacturing industry. Especially, production of condom in a tropical area is linked with weather conditions. With Indonesia also being a tropical country, it will be desirable to adopt well experienced foreign technologies for production in order to make this project successful.
2. Indonesian natural latex, which has not been used for the production of condom, is required to be used in the project. It is therefore expected that development plan of Indonesian latex will be materialized before trial operation of plant by taking immediate action.
3. Technical assistance services by plant supplier would require at least 3-5 years. Especially, technical assistance by the technicians experienced in manufacturing condom for long enough period is recommended.

