OCCASION

This publication has been made available to the public on the occasion of the 50th anniversary of the United Nations Industrial Development Organisation.

DISCLAIMER

FAIR USE POLICY

CONTACT

Please contact publications@unido.org for further information concerning UNIDO publications.

For more information about UNIDO, please visit us at www.unido.org

UNITED NATIONS INDUSTRIAL DEVELOPMENT ORGANIZATION
Vienna International Centre, P.O. Box 300, 1400 Vienna, Austria
Tel: (+43-1) 26026-0 · www.unido.org · unido@unido.org

Distribution:
LIMITED

ID/WG.99/37
26 November 1971

Original: ENGLISH

United Nations Industrial Development Organization

Second Interregional Fertilizer Symposium

Kiev, USSR, 21 September - 1 October 1971
New Delhi, India, 2 - 13 October 1971

Agenda item II/8

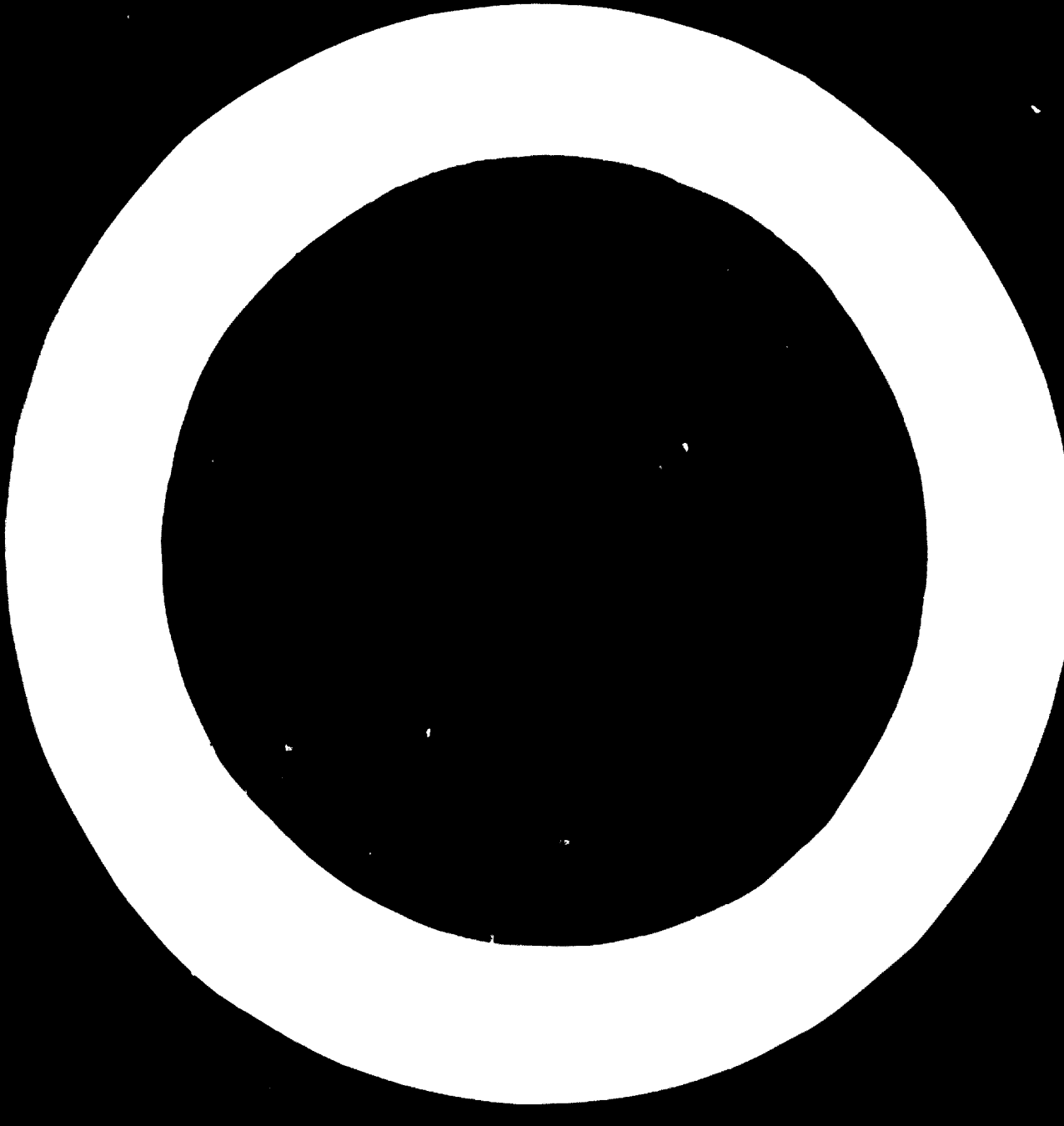
THE FERTILIZER INDUSTRY OF INDONESIA[1/]

by

Nico Kansil
Indonesia

1/ The views and opinions expressed in this paper are those of the author and do not necessarily reflect the views of the secretariat of UNIDO. This document has been reproduced without formal editing.

14.71-900



INTRODUCTION

The economic development in Indonesia in recent years has been favourably influenced by some important steps taken by the Government of Indonesia such as the promulgation of the Law no.1 year 1967 on Foreign Investment, Law no.8 year 1968 on Domestic Investment which have permitted and stimulated private investments in Indonesia and the implementation of the First Five Year National Development Plan which launched on April 1, 1969.
The Plan emphasizes on development in the agricultural sector particularly the production of rice as the nation's staple food. The Plan is aimed to increase rice production from 10.52 million tons in 1969/70 to 15.42 million tons in 1973/74.
Agriculture contributes 60% of the national income, employs 70% of the 120 million population and earns 70% of Indonesia's foreign exchange.
In line with the drive in agricultural development the Government of Indonesia has given high priority to the development of agro-oriented industries including the fertilizer industry which is still in its infancy.
This paper briefly outlines the current status, plans and prospects for development of the fertilizer industry in Indonesia.

I. CURRENT STATUS

In 1963 the first chemical fertilizer plant designed to produce 100.000 t/y urea was innaugurated at Palembang, South Sumatera.
The plant known as Pusri I utilizes natural gas from the surrounding oil and gas fields both as feedstock and plant fuel.
Currently preparations are well underway for the expansion of Pusri I in order to increase the plant output by 380.000 t/y urea. The expansion scheme known as Pusri II is being financed from loan by the World Bank, USAID, Asian Development Bank and the Japanese Government. Pusri II which is expected to completed early in 1974 will also be designed to utilize natural gas as feedstock and plant fuel. About the same time as the innauguration of Pusri I construction was also started of two fertilizer projects namely a 100.000 t/y single superphosphate plant at Tjilatjap in 1963 and the urea ammonium sulphate plant at Cirebon, East Java in 1964.

None of these fertilizer plants however have been completed although the urea ammonium sulphate plant at Gresik is already in the final stages of construction but due to some technical difficulties it is not expected to operate before 1972.

The less developed and partially completed Superphosphate plant at Tjilatjap has been left idle since 1966 and an inventory of the plant equipments and facilities will be made in order to determine both losses and degree of deterioration and corrosion of the equipment due to the prolonged exposures and poor storage.

Recently project proposals for the establishment of fertilizer blending units have been submitted to the government for consideration.

In the meantime two fertilizer bulk handling facilities have recently been established at Tandjung Priok and Tjilatjap harbours each with a capacity of 300.000 t/y and 60.000 t/y.

The lack of reliable estimates on Indonesia's fertilizer requirement has to some extent affected the development of the fertilizer industry and therefore the Government in June 1970 initiated a national study on fertilizer to examine both the potentials and problems facing the development of the fertilizer industry. The Study is practically completed with only the final report still to be submitted to the Government by the consultants. The national fertilizer study is an important step in realizing a sound development of the fertilizer industry in Indonesia.

II. PLANS FOR DEVELOPMENT

1. During the Development Plan (1969/70 - 1973/74)

The fertilizer production targets as stated in the development plan are presented in the following table:

Fertilizer production targets (1968/69 - 1973/74)

Year	N (in thousand tons)	P_2O_5 (in thousand tons)
1968/69	[illegible]	- -
1969/70	[illegible]	- -
[illegible]	[illegible]	- -
1971/72	[illegible]	16
1972/73	[illegible]	18
1973/74	[illegible]	[illegible]

It was envisaged that the above targets would be realized by completing fertilizer plants already under construction namely the Petrokimia urea-ammonium sulphate plant at Gresik, East Java, and the single super-phosphate plant at Tjilatjap, Central Java, as well as the construction of new fertilizer plants at Palembang, South Sumatera, for the production of urea and a compound fertilizer plant projected at Djatibarang, West Java.
In the light of current achievment however it is reasonable to expect that only Petrokimia and Pusri II will contribute to the increase in domestic fertilizer production before the end of the development plan in 1973/74 with a total output at full production of 232.500 t/y nitrogen nutrient.
Technical difficulties and the lack of funds have been the major reasons for the delay in completing Petrokimia and Superphosphate projects due to some extend to the lack of proper planning of these projects.
In the establishment of new fertilizer projects such as Pusri II however, the time required for project preparations which include feasibility study, negotiations for loan agreement, the preparation of the technical specifications for and the invitation to tender and the selection of the contractors has made it difficult to start and complete construction Pusri II before the end of the five year period.
The establishment of a compound fertilizer plant projected at Djatibarang, West Java will depend on the results of the national fertilizer study both regarding location and the type of fertilizer to be produced as well as the capacity of the plant. Indications sofar point to the possibility of establishing an urea - ammonium phosphate complex based on ammonia production capacity of 1.000 t/day.

2. **After 1973/74**

The development of the fertilizer industry in Indonesia after 1973/74 at least until 1980 will depend on the recommendations of the National Fertilizer Study.

Before the National Fertilizer Study various estimates on Indonesia's fertilizer requirement have been made both by Indonesian experts and foreign consultants. The wide divergence of these estimates however, has made it difficult for the Government to plan the development of the fertilizer industry. The complex problems which affect the use of fertilizers by the farmers such as price, import procedures, distribution, subsidies, extension services have been evaluated in depth by the National Fertilizer Study. As a result of the Study the consultants have made recommendations covering both improvements which need to be made in promoting fertilizer application and fertilizer production in Indonesia.

The Study points out the need to intensify research on the application of fertilizers and that sufficient funds should be provided by the Government for research purposes. The need to intensify pest and disease control has also been stressed together with improvements in the extension methods and practices. Until now Indonesia does not have a law on fertilizer and therefore the consultants have recommended the appointment by the Government of a National Inter-Ministerial Fertilizer and Plant Protection Control Board consisting of members of the various departments and institutions directly involved in the production, supply and application of fertilizers. The tasks of the Board besides the elaboration and administration of a fertilizer law will also include selection and interpretation of fertilizer statistics, determination of price and subsidy policies as well as planning of industrial policy with respect to domestic fertilizer production. The consultants have also pointed out possible improvements in fertilizer import procedures, distribution and the need to study on a continuing basis the credit policies so that the necessary adjustment could be made when required.

In the field of fertilizer production the recommendations to complete the construction of the urea-ammonium sulphate plant Petrokimia at Gresik as originally designed without excluding the possibility of altering the product mix to urea, urea and mono-ammonium phosphate if economically justified after further studies. In relation to Petrokimia the production of diammonium phosphate and caprolactam has also been mentioned as possible alternatives.

The completion of the Superphosphate plant at Tjilatjap appears to be uneconomical both for the production of single superphosphate as originally designed or even triple superphosphate.

Regarding the establishment of new fertilizer projects the consultants have proposed that fertilizer industry in Indonesia should be directed towards the production of compound fertilizers and the construction of an urea ammonium phosphate plant has been proposed to be considered after Pusri II based on domestic ammonia and urea production and imported phosphoric acid.

Detail study will be required to determine the exact capacity and location of the plant although the consultants have already suggested possible alternatives.

As the National Fertilizer Study is the most extensive fertilizer study carried out sofar which is sponsored by the Government of Indonesia and the World Bank the findings of the Study will be used by the Government as the basis for the development of the fertilizer industry within the next decade.

III. PROSPECT FOR DEVELOPMENT

1. Indonesia's fertilizer requirements

The estimated fertilizer requirements stated in the development plan (1969/70 - 1973/74) and fertilizer consumption as projected by the consultants for the National Fertilizer Study are presented in the following tables :

Estimated Fertilizer Requirement in the First Five Year National Development Plan (in thousand tons)

Year	N	P_2O_5	K_2O
1968/69	245	122	13
1969/70	320	150	14
1970/71	380	175	15
1971/72	450	209	18
1972/73	502	245	19
1973/74	571	284	20

Projected Fertilizer Consumption by crop 1969 - 80 from the National Fertilizer Study (in thousand tons)

	N			P_2O_5			K_2O			NPK		
	1969	1974	1980	1969	1974	1980	1969	1974	1980	1969	1974	1980
TOTAL	142	311	582	52	127	296	26	78	169	220	516	1.047
Rice	87	190	356	23	52	141	1	2	30	111	244	527
Secondary foodcrops	22	53	123	9	24	80	4	9	36	35	86	239
Smallholder cash crops	11	13	32	6	7	21	6	8	25	23	28	78
Estates	22	55	71	14	44	54	15	59	78	51	158	203

2. Sources of fertilizer supply

With only the Pusri I urea plant producing on the average 24% of the design capacity of 100.000 t/y, the bulk of the fertilizer needs are supplemented from imports.

The major types of fertilizer, imported for the foodcrop and estate sectors are presented in the following tables :

Major types of fertilizers imported for the foodcrops sectors

(1965 - 1970) (in tons)

Type of fertilizer	1965	1966	1967	1968	1969	1970
Ammonium sulphate	50.000	20.000	-	-	20.000	12.000
Urea	10.650	32.763	81.794	287.000	160.113	163.775
Triple superphosphate	-	-	24.000	92.500	91.471	2.100
Double superphosphate	4.000	5.600	-	-	-	-
Ammonium phosphate	16.000	3.000	-	7.000	6.500	4.500
Rustica nitro(20.20.0)	-	2.375	-	-	55.573	6.600

Major types of fertilizer imported for the estates sector

1965 - 1970

(in tons)

Type of fertilizer	1965	1966	1967	1968	1969	1970
Ammonium sulphate	72.580	47.985	43.170	3.600	54.828	63.918
U r e a	31.000	50.221	27.935	3.000	500	4.397
Triple superphosphate	7.035	-	-	5.000	560	7.666
Double superphosphate	14.030	4.600	50	-	3.047	4.460
Potassium sulphate	-	-	-	-	4.532	2.244
Potassium chloride	13.950	6.495	5.800	3.900	9.267	12.383
Compound fertilizer	5.035	2.837	1.000	-	27.246	38.824

The above statistics on import clearly indicate the trend to apply high nutrient fertilizer although in the estate sector ammonium sulphate is generally preferred especially for sugar cane plantations. The National Fertilizer Study has recommended to investigate the possibility of substituting urea for ammonium sulphate especially for sugar canes.
Import of fertilizers is arranged by the Department of Trade which selects the importers on a tender basis. The amounts and types of fertilizers to be imported are determined by the Department of Agriculture which issues a list on fertilizer requirements twice a year corresponding to the wet and dry seasons.

3. Raw materials

Indonesia has substantial reserves of oil and natural gas and therefore the production of nitrogeneous fertilizers will not present a problem.
At the present time extensive oil explorations are being conducted throughout Indonesia both on shore and off shore and new oil reserves have been discovered. With regard to potash and phosphate raw materials however no deposits of commercial importance have so far been discovered. Although the sulphur situation is slightly more favourable, the high cost for exploitation of known deposits has made Indonesia rely mainly on imports for its sulphur requirements.
It has been suggested by the National Fertilizer Study to import phosphoric acid for the production of DAP.

4. Participation of the private sector

At the present time all the chemical fertilizer production facilities are state owned. The reasons for the state ownership are partly historical because between 1960 - 1965 under the system of controlled economy the economic development of the country was in the hands of the government. Since 1967 however the government has allowed the participation of the private sector in the economic development of Indonesia under the provision of the Foreign Investment Law no.1, 1967 and the Domestic Investment Law no.8, 1968. Although the volume of investments by the private sector has been increasing continuously the government still takes the initiative in the development of the fertilizer industry because of its importance in supporting the agro-oriented development plan and also because of the huge investments usually associated with the

construction of large scale fertilizer projects which render them beyond reach of many private investors.

In the future however it is to be expected that the private sector will play an increasingly important role also in the development of the fertilizer industry and this will no doubt enhance future development of the fertilizer industry in Indonesia.

14.3.74