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THE STATUS OF DEVELOPMENT OF
THE FERTILIZER INDUSTRY
/ IN INDONESIA ^{1/}

prepared by

the Directorate General for Chemical Industries
Ministry of Industry - Indonesia

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I. Introduction.

- (1). Indonesia is now implementing the second year of the Second five year National Development Plan which will end on March 31, 1979.
- (2). Similar to the First Five Year Development Plan the emphasis of development is on the agricultural sector and persistent drive to attain self sufficiency in food production remains the main theme of national development.
- (3). The annual growth of population in Indonesia is $\pm 2\%$ and at present totals ± 130 million people.
- (4). It is therefore one of the major challenges for Indonesia to continuously increase its food production particularly the production of rice if Indonesia is to be self supporting in food production which is one of the priority objectives.
- (5). Realizing these needs the Government of Indonesia has taken great strides to develop its fertilizer industry which in addition to provide the essential nutrients required by the agricultural sector also provides an opportunity for better utilization of its natural resources through industrialization.

This paper briefly describes the current status, plans and potentials for future development of the fertilizer industry in Indonesia.

II. New Era in the development of the fertilizer industry.

- (1). Until recently development effort in the fertilizer industry in Indonesia has been geared towards the production of solely nitrogenous fertilizers, particularly urea.
- (2). Towards the end of 1975, however, the Government of Indonesia has concluded a contract for the construction of a $15\% \text{ DAP} / 35\% \text{ NPK}$ plant in Gresik, East Java, with a total design capacity of -- 400,000 t/y.

comprising : PFA 380,000 t/y
 DAP 50,000 t/y
 NPK 50,000 t/y

The Tsi/Usa/Amk project is scheduled for completion late 1976.

- (3). The priority given to the development of the nitrogenous fertilizer industry is due to :
 - (i). the abundant reserves of natural gas.
 - (ii). nitrogenous fertilizer particularly urea constitutes the bulk of the domestic fertilizer requirements.
- (4). The recent effort to diversify the production of fertilizer products is in line with our national strategy on the development of the chemical industry in general and the fertilizer industry in particular in order to gradually build up domestic production to satisfy domestic requirements for the various industrial products always bearing in mind the competitiveness of these domestically produced prices - commodities as compared to international market.
- (5). As a result the GOI has adopted certain minimum standard plant capacities which reflect the technological development in developed countries, in the development of its fertilizer industry. Urea fertilizer projects which have recently been approved and are now under construction or in the planning stage are based on at least 1,000 MTL ammonia units. The urea projects now under construction are as follows :
 - (i). Pusri III based on natural gas feedstock to produce 570,000 MTL urea and is expected to be completed at the end of 1976. The plant located at Palembang, South Sumatra constitutes the second phase expansion of the Pt. Pusri fertilizer company which now has already 2 units operation namely :
 - Pusri I with a design capacity of 100,000 MTL of urea completed in 1963 based on natural gas feedstock.
 - Pusri II with a design capacity of 350,000 MTL of urea and commissioned in the second half of 1974, based on natural gas feedstock.
 - (ii). Pusri IV is the third phase expansion of the Pusri fertilizer company.
 - Pusri IV has the same ammonia/urea capacities as Pusri III and is also based on natural gas feedstock commissioning date is expected at the end of 1977.

When Pusri III & IV are completed the total installed capacity of the Pusri complex will be ± 1,6 million tons of urea per annum.

- (iii). Kujang fertilizer plant located at Cikampek, West Java, is now under construction and is expected to be in operation - late 1978.

The plant has a design capacity of 570.000 MTY of urea and is based on natural gas feed stock. The capacity of the ammonia plant is 1.000 MT/D.

Combining the above project currently under construction with existing plants already in operation the total installed capacity expected at the end of the Second Five Year Development Plan March 31, 1979, will be as follows :

(i).	Urea :	
	Pusri I	100.000 MTY
	Pusri II	330.000 MTY
	Pusri III	570.000 MTY
	Pusri IV	570.000 MTY
	Kujang	570.000 MTY
		<hr/>
	Total	2225.000 MTY (1.023.500 ton N)
(ii).	Ammonium Sulfate :	
	Petrokimia	150.000 MTY (31.500 ton N)
(iii).	TSP :	
	Petrokimia	330.000 MTY (151.800 P ₂ O ₅)
(iv).	MAP :	
	Petrokimia	80.000 MTY
(v).	MAP :	
	Petrokimia	50.000 MTY

III. What Next/Eminent Projects

- (1). If until recently effort has been concentrated to meet within the shortest possible time domestic fertilizer requirements from indigenous production, there Indonesia is now approaching a situation --

where there is a possible surplus of urea fertilizer.

(2). The change in the demand & supply situation will have to be taken into consideration because it will have an impact on the pace of development of the fertilizer industry if solely oriented to fulfilling the domestic requirements. On the other hand the excess of urea from domestic production will provide an opportunity for Indonesia to enter, into the fertilizer export market and these possibilities are currently being explored by the GOI.

(3). In addition to the fertilizer plants mentioned above there are 2 eminent urea fertilizer projects which are now being tackled by the GOI:

(i). To resume the construction on shore of the East Kalimantan urea project which was originally based on a floating one. The design capacity of the plant 1,500 mt/yr ammonia of which 1,000 mt/yr is to be converted into urea while 500 mt/yr will be sold and used for other purposes. Natural gas will be used as feedstock.

(ii). To construct a regional (ASEAN) urea fertilizer project - in Aceh North Sumatra as one of the five industrial projects already agreed upon by the ASEAN member states within the framework of ASEAN cooperation. The capacity of the urea plant is envisaged to be 570,000 mt/yr based on natural gas feedstock.

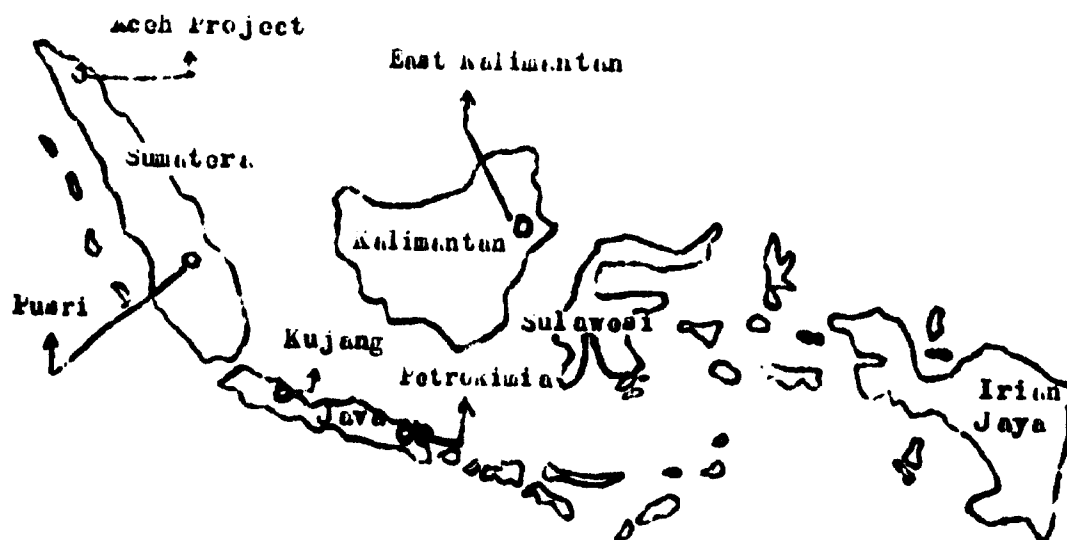
iv. Fertilizer Distribution

In order to handle the distribution of the increasing quantities of fertilizer produced in the country the GOI has taken steps to improve both the system and the physical facilities for distribution.

To this end the GOI has recently completed a national study on fertilizer & pesticides distribution with financial assistance from the World Bank. The study has identified the need to improve and extend the existing facilities for handling and distribution of these important agricultural inputs and has put forward recommendations for improving the system of distribution in order to ensure the continuing availability of these commodities to the consumers i.e. the farmers at the village-level.

Prior to the study, however, the GOI in connection with the expansion of the Pusri fertilizer plant at Palembang, South Sumatera had realized the need to improve both the distribution system and facilities - and had taken steps to meet these needs. Among the steps taken by the GOI before the study was initiated in September 1973 were the construction of bulk terminals and bagging facilities at various important - ports such as Jakarta, Surabaya, Cilacap on Java as well as on other islands particularly Sumatera and Sulawesi. In order serve these bulk terminals the GOI had ordered bulk carriers which would transport the fertilizers in bulk from the Pusri plant.

In this connection it seems that a brief reference of the geography of Indonesia will help to illustrate the importance of the new distribution system/pattern which is being developed.



It is noted from the map that the bulk of the fertilizer produced in Indonesia comes from plants outside Java particularly Pusri which by 1976 is going to have a total installed capacity of ± 1.3 million tons of urea. On the demand side, however, these outer islands (islands - outside Java) do not constitute a big consumer because the island of Java although only 7% in terms of total area of Indonesia, approximately 70% in terms of population consumes $\pm 77%$ of the total national fertilizer requirements. It is therefore obvious that with the limited fertilizer production capacity on Java there will be a continuous inflow of fertilizer into Java from the outer islands as well as imports.

In order to transport the fertilizers from the outer islands to Java sea transportation plays a very important role and a combination of bulk carriers and bulk terminals/bagging stations located at various ports on Java provides the best solution.

Further distribution of fertilizer from the bulk terminals/bagging stations to the consumers will be done by rail or trucks. In this connection it is planned to have an integrated transportation/storage system as far down the line as the kabupaten (sub-province) level where inland storage depots (ISD) will become the supply centres for further distribution down to the village level/farmers. The idea of the ISD is ensure as far down the line as possible the availability of fertilizer within an integrated system. From the ISD onward the distribution will be done by various local fertilizer distributors who are expected to have their own storage facilities further down the chain of distribution until the village level.

Regional Cooperation

The ASEAN member countries Indonesia, Malaysia, the Philippines, Thailand and Singapore have agreed to establish 5 regional industrial projects, with one project respectively allocated to each member country.

It is of interest to note that three out of these 5 industrial projects are fertilizer projects namely 2 urea projects to be established respectively in Indonesia and Malaysia and a phosphate fertilizer project to be constructed in the Philippines. The identification of these industrial projects with the emphasis on fertilizer projects clearly reflects the importance placed on the development of the agricultural sector in the region.

Indonesia with its abundant reserves of hydrocarbon feedstocks is in position to contribute to this scheme through the development of its indigenous fertilizer industry. The Government of Indonesia has already conducted a feasibility study for the establishment of the ASEAN urea project to be located in Aceh North Sumatra with a design capacity of -- 570,000 MT/Y as mentioned earlier in this paper. On the other hand Indonesia lacking in phosphate & potash reserves can make use of these products produced in the other ASEAN countries.

As a follow up of the Asian Committee on Industry Meeting held in Manila at the end of April 1976 the GOI has initiated a regional fertilizer study by engaging an independent consultant. The fertilizer market study - conducted in July 1976 has provided an up to date assessment of the projected fertilizer supply - demand situation of the Asian region until - 1985 and how development of the fertilizer industry in the region could best be geared to meet these needs.

V. Looking Ahead/Future Prospects.

The growing need for food due to the increase of population and improvement in the standard of living means more fertilizer needs to be produced to support the necessary drive to intensify the development of the - agricultural sector.

Among the potential fertilizer projects currently being considered or in the early planning stage are as follows :

- (i). The establishment of a compound fertilizer plant based on imported phosphoric acid and ammonia from the PT. Pusri plant.
- (ii). The construction of a TSP plant at Cilacap, Central Java with an installed capacity 300,000 - 400,000 MTY of TSP based on imported rawmaterials.
- (iii). The expansion of the present East Kalimantan Urea Project by a second unit to be based on natural gas.

With the experience and know how accumulated until now in the construction and operation of fertilizer plants, the GOI has set out a strategy to promote increasing domestic participation in the construction of new fertilizer plants and eventually could also play a role in the design and engineering.

In fertilizer plant operation local capabilities have shown an excellent performance and the Pusri plants especially have been operating at or - close to their design capacities. The growth of the domestic fertilizer - industry would mean more and more operating personnel will be required , however, in contrast to the past now most of the training can be done within Indonesia.

The existing fertilizer facilities have become the nuclei where training of fertilizer plant operators can be successfully accomplished and this means a substantial saving in training expenses not to mention the hard-currency requirements associated with training abroad.

On the raw material aspect Indonesia has still vast untapped hydrocarbon deposits particularly natural gas for the production of nitrogenous fertilizer. On phosphate & potash raw materials available data indicate that Indonesia will have to rely on imports until further geological explorations prove the existence of these deposits indigenously.

VI. Conclusions.

1. The total installed capacity of operating plants and projects under construction comprises :

Urea	:	2,225,000	MT/Y
AS	:	150,000	MT/Y
TSP	:	330,000	MT/Y
DAP	:	80,000	MT/Y
NPK	:	50,000	MT/Y

2. The production of urea will exceed domestic requirements at the end of the Second Five Year Development Plan.
3. Two eminent urea projects to cater respectively for domestic and regional (Asean) needs are the East Kalimantan Project and Aceh Project.
4. In the long term outlook Indonesia has good prospect to maintain an export position of urea fertilizer as from 1977.
5. The distribution of fertilizer in the country using bulk carriers bulk & bagging stations Inland Storage Depots L I S D has been initiated and is continuously being developed.
6. Every effort is being made to increase the share & contribution of local capabilities in the operation, construction, engineering, design of fertilizer plants.



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