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DEVELOPMENT ISSUES FOR INDONESIA

(in five volumes)

Volume IV

ANNEX 5: THE OIL SECTOR

ANNEX 6: EXPORT TRENDS, 1971-1978

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December 1, 1972

Asia Program Department I

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accuracy or completeness of the report.

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Annex 3 of the report, on agriculture, is based on the findings of an agriculture sector mission led by Mr. S. Takahashi which was in Indonesia in February-March, 1972.

ANNEX 5

THE OIL SECTOR

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I. PHYSICAL DEVELOPMENT OF THE OIL SECTOR

Exploration

1. Pertamina is actively exploring for oil in almost all promising areas throughout Indonesia either in its own right or through contracts of work or production-sharing contracts. The last economic report discussed exploration prospects and listed production-sharing contracts up to October 31, 1971. 1/ Since then, Pertamina has signed two production-sharing contracts. The first was on March 3, 1972, with Indonesian Offshore Operators, Inc. and covers an area offshore southern West Irian. The second was in August 1972 with CFP-Total and covers an onshore area in the Mantalik and Pamai districts of Central Sumatra. Provisions of both contracts are similar to those in other recent production-sharing contracts. 2/
2. Drilling activity in 1971 reached a record level of more than 425 wells and about 1.9 million feet drilled, which is roughly twice the level in 1970. Development and extension drilling accounted for about 68 per cent of wells completed that year. Wildcat drilling accounted for about 32 per cent of wells completed and was about equally divided between on and offshore activity. 138 wildcat wells were completed in 1971, about double the number in 1970; and oil was found in 21 of the wells. Exploration in 1972 is expected to be as active as in 1971.
3. Some important oil discoveries have been made in 1971 and early 1972; they will require additional work to evaluate their commercial significance. Successful wildcat wells in 1971 led to the discovery of new oil structures onshore Sumatra under contracts of work to PT Stanvac Indonesia (PTSI - a joint venture of Jersey Standard and Mobil) and Caltex Pacific Indonesia (CPI - a joint venture of California Standard and Texaco) and under production-sharing contracts to Calasiatic - Topco (owned separately by California Standard and Texaco respectively). A new field has been confirmed at Alor Djimon in north Sumatra (Asamera), and others offshore N. W. Java both in the "L" structure just to the west of the Ardjuna field (ARCO) and at Kitty, Gita and Zelda (IIAPCO). Promising oil strikes have been made offshore E. Kalimantan at Bekapai (CFP/Japex) and Kerindingan and Melahin (Union Oil). An oil and gas field has been found onshore in S. E. Kalimantan at Badak (Huffington-Virginia International group), and its development is being accelerated.
4. Gas has been found onshore at Arun in N. Sumatra (Mobil); two successful wells were tested in 1972 at 14 million cfd and 50 million cfd plus condensate. The results are now being evaluated and seem to indicate the presence of a large gasfield there. Gas has also been found nearby in the Lhu Sukon structure (Mobil) and offshore in Block A of the South China Sea

1/ Paragraphs 11-17 and Table 2 respectively of Annex A "The Petroleum Sector in Indonesia" to "The Indonesian Economy: Recent Developments and Prospects for 1972/73" (EAP-27a) dated November 30, 1971.

2/ See paragraph 5 and Table 2 of Annex A to the last economic report.

(AGIP/Phillips/Tenneco) and offshore E. Kalimantan at Panjilatan (Jasper Total) adjacent to the Badak field. Additional work is being done to evaluate these and other structures.

5. Exploration and development expenditures by foreign oil contractors have accordingly grown rapidly:

(US\$ Million)

1968	45.5
1969	90.5
1970	113.0
1971	207.0
1972 estimated	237.0

6. Though one or two contractors have recently relinquished part of their offshore areas ahead of the date stipulated in their production-sharing contracts, the conclusion still holds good that optimism remains high about continued exploration offshore Indonesia. There has been no discovery yet of a Middle Eastern size since the Minas field. On the other hand, it could still happen as in the case of Libya, Alaska and the North Sea. Meanwhile the new fields thus far developed at Ardjuna, Cinta and imminently at Attaka are still economically attractive to contractors in view of the profit-sharing arrangements in their contracts, the high price commanded by low sulphur oil and the relative nearness of the Japanese market.

Offshore Boundaries

7. With a view to rapid development of offshore oil resources, the Government has made effort to reach agreement with neighboring countries on offshore boundaries. In December 1971 it signed a tripartite agreement with Malaysia and Thailand on offshore boundaries and signed a further agreement with Malaysia defining the continental shelf boundary in the northern part of the Malacca Straits and the Andaman Sea. Some ten other boundaries need definition, particularly those with S. Vietnam and Australia where there are prospective areas for exploration. Indonesia and Australia have demarcated their offshore boundaries between West Irian and Papua/New Guinea, between West Irian and Australia between Timor and northwest Australia.

Oil Pollution

8. While oil pollution in Indonesia has still not become the serious problem which it is in most industrial advanced countries, steps need to be taken as soon as possible to avoid contamination of air and water in view of the recent rapid growth of the Indonesian manufacturing industries. In view of the ever-growing risk of oil pollution from tanker traffic and offshore oil exploration and production, the Government Mineral Oil and Gas Institute (LEMIGAS) took the initiative in 1970 in setting up

an informal study group with representatives from Lemigas, Pertamina, Bandung Institute of Technology, Bogor Agricultural Institute, Gadjah Mada University, the Navy Hydrographic Office, and the Directorate of Fisheries. In March 1972 the Minister of Mines established a permanent committee staffed from his Ministry, Pertamina and LEMIGAS to advise on policy and regulations to control oil pollution. Its functions are to draw up a joint policy and regulations on preventing and combating oil pollution of sea, air and shore; to coordinate with the other relevant ministries in applying the international convention regarding oil pollution at sea, to direct research and investigation of the effects of pollution on sea, air and shore; and to participate in international and national bodies concerned with pollution. The permanent team is now preparing regulations, and the Ministry has already adopted certain measures to control oil pollution.

Production

9. Though commercial production of oil in Indonesia first started in 1893, crude output twenty-one years ago (1951) was still only 152,000 b/d. Production rose to 467,000 b/d in 1966 and then at a compound annual growth of 16.3% to 854,000 b/d in 1970. It averaged 892,000 b/d (325.6 million barrels) in 1971, an increase of only 4.5% over 1970. ^{1/} In 1972 total production is expected to increase by 24 per cent over 1971 to reach 1,101,000 b/d (403.1 million barrels). A strike of Japanese seamen working in Japanese-flag ships, which took place from mid-April to mid-July, caused a cutback of oil imports into Japan during those months from the Middle East and Indonesia. Indonesian crude production was consequently cut back from levels previously planned for those months. Since then, Japanese buyers have been hard seeking crude imports to replenish critically depleted stocks. Indonesian crude production in 1972 hence is likely to be only slightly lower than that expected had there been no Japanese strike.

10. The sharp growth of output in 1972 compared with 1971 results from major increases in output onshore under contracts of work, essentially Caltex and offshore under production-sharing contracts. Caltex brought production in its contract area up from 720,000 b/d average in 1971 to an average 781,000 b/d in January-March 1972 and to a record 875,000 b/d in April. It planned to bring it to 900,000 b/d in April-June and to a level of 940,000 b/d in July-December. Its production during May-July was cut back by some 60,000-100,000 b/d from that planned as a result of the Japanese strike, and is now estimated at 870,000 b/d in July-December. Its expansion was achieved by bringing four new central Sumatran fields into production at Bangko, South Balam, Menggala and Kotabatak. It has now installed (i) a new gathering system and pipeline to bring crude from the first three fields to the main Sumatran oil loading port of Dumai, and (ii) a new pipeline from Kotabatak

^{1/} Further details of output are given in Table 1 and discussed in paragraph 9 of Annex A to the last economic report (EAP-27a) dated November 30, 1971.

field into the existing line connecting the Minas field to Dumai. It has also built additional storage tanks and loading facilities and a third pier capable of handling 150,000 d.w.t. tankers at Dumai. Caltex's output in 1972 is expected now to average 840,000 b/d. Under production-sharing contracts output is expected to grow during 1972 from the Ardjuna and Cinta fields but not to start until early 1973 from the Attaka field offshore N. E. Kalimantan operated by Union Oil/Japex or from the corridor block in Central Sumatra, assigned by Redco to Stanvac in February 1971. Pertamina's field under development at Djabatbarang, W. Java is also not expected to start output until early 1973.

11. Total production for 1971 and estimated for 1972 is as follows:

	<u>1971</u>	<u>1972</u>
	<u>(Million Barrels)</u>	
Contracts of work:		
Caltex	262.8	307.4
Stanvac	<u>23.0</u>	<u>27.3</u>
	285.8	334.7
Production-sharing contracts:		
ARCO - Ardjuna Field	1.5	13.2
IIAPCO - Cinta Field	2.5	13.5
Gulf and Western - Ceram	0.5	0.5
Union/Japex - Attaka Field	-	-
Stanvac - Corridor Block	<u>-</u>	<u>-</u>
	4.5	27.2
Pertamina (including Lemigas)	<u>35.2</u>	<u>41.2</u>
	<u>325.6</u>	<u>403.1</u>

12. As for the future, the Government's latest prediction of crude oil production through 1978 is given in Table 2. The forecast looks at output from (i) existing fields already in commercial production and (ii) new fields already proven and expected to be brought in to production. It does not take into account output from unknown new fields which stand a good probability of being discovered during the next three or so years and brought into commercial production by 1978, i.e. within the period under review. This seems a reasonable position for the purpose of predicting sources of finance for the next 5-year plan (1973/74 - 1978/79), on the grounds that such reserves of oil (i) have not yet been found and (ii), if found, would in all likelihood take at least 3 years to develop

for initial production and another 1-2 years for full production. However, the forecast made for the first two sources above indicates the continued need for an active exploration program to find and bring new fields into production by 1977, if total Indonesian production is not to risk declining from its predicted plateau in 1976. The official forecast predicts annual increments in the combined output from the first two sources above from 1,139,000 b/d (403.1 million barrels) in 1972 to about 1.8 million (669.0 million barrels) in 1976, a compound growth of 13.5 per cent yearly. However, it indicates a combined decline to about 1.7 million b/d (617.1 million barrels) by 1978.

13. Production from existing fields under contract of work is seen to peak at about 970,000 b/d in 1973 when Caltex's fields in central Sumatra are fully developed, and thereafter to decline at an average rate of 21 per cent yearly to just under 400,000 b/d in 1978. The above decline rate is derived from the contractors' own estimates and appear to be on the conservative side. If true, however, it indicates the need for improved recovery of reserves from existing fields, for example by drilling extension wells and increasing the use of secondary recovery techniques. A decline rate of 10 per cent yearly, for example, would result in an additional 200,000 b/d of output from such fields in 1978. The additional output would result in a combined output of 1.9 million b/d (688.1 million barrels) in 1978 from the above two sources, thereby avoiding the predicted decline in total output. Production from existing fields under production-sharing contracts - Ardjuna, Cinta, Ceram, Attaka, and corridor block - is foreseen to reach its plateau of just under 300,000 b/d in 1975 to 1976 and thereafter to decline by about 16 per cent yearly. Production from existing fields, operated solely by Pertamina and including the Djatibarang field, is foreseen to reach a level of just under 150,000 b/d during 1973-1976 and thereafter to decline by about 10 per cent yearly. Combined production from all existing fields is therefore seen to decline from a peak of 1.3 million b/d in 1973 to about 700,000 b/d by 1978.

14. Production from new fields - already proven and expected to be brought into production - is foreseen to emerge from such promising areas under contract of work as the Petapahan, Suram and Sintong fields (Caltex) in central Java, and under production-sharing contracts as those discussed in paragraph 3. Such production is assumed to start in 1973 and to increase through the period reaching 1.0 million b/d by 1978.

"Pro-rata" Crude

15. A feature of the Indonesian arrangements is that with the exception of the four earliest production-sharing contracts, each crude oil producer is required to supply to the Government at cost plus 20 cents per barrel a "pro-rata" share of its output. In the case of Pertamina itself and the producers operating under contracts-of-work, the pro-rata share which they are obliged so to deliver to the Government, is a percentage of their output equal to the percentage of total national output represented by domestic market requirements. In 1971 the sales volume of refined products

in the domestic market was about 44.0 million barrels. For the purpose of calculating pro-rata crude obligations, this is taken to equal 49.1 million barrels of crude oil input to domestic refineries, assuming the Indonesia convention of 10 per cent for fuel use and losses in refining. In 1972 the domestic market requirement is officially estimated at 46.9 million barrels, similarly indicating 52.4 million barrels of crude oil input. The pro-rata percentage was therefore 15.1 per cent for 1971 and is currently estimated at 13.0 per cent for 1972.

16. In the case of production-sharing contracts (other than the four earliest), this percentage is applied not to their total output but only to the contractor's share of that output (after deducting costs and the Government share of output). The remaining contribution due from these operations to the national pro-rata supply must be provided out of the Government-Pertamina share in output under these contracts. The principle for calculating pro-rata crude is shown in Table 5 for 1971 and 1972.

17. For the future, pro-rata deliveries to the domestic market are foreseen to increase at about 8 per cent yearly from 1971 to 1978 (Table 2). This is based on the domestic market projections made in Table 7 and discussed in paragraph 55. On these assumptions the pro-rata percentage would remain at a tolerable level from the viewpoint of export availability, not exceeding 13.5 per cent by 1978. Thereafter it will rise steadily unless new reserves are found and brought into production. The most striking aspect of the forecast is the change in sources of pro-rata crude. The remaining contribution due from the Government-Pertamina share of output under production-sharing contracts could rise from about 0.6 million barrels in 1971 to about 39 million barrels by 1978 and become the largest single source (46 per cent) of pro-rata crude. (See Table 2.) The implications for the basic cost of domestic marketing are discussed in paragraph 58.

II. OIL PRICES

Recent Development in Indonesian Oil Export Prices

18. The export price of Indonesian crude oil rose dramatically in 1971 and 1972. Pertamina raised its price for export sales of 35.0 API Minas crude oil to its 50 per cent affiliate in Japan, Far East Oil Trading Company, from \$1.64 per barrel f.o.b. Dumai in early 1971 to \$2.21 effective April 1, 1971, \$2.60 October 1, 1971 and \$2.96 April 1, 1972. It raised prices to other customers from \$1.67/\$1.70 per barrel in early 1971 to the above prices on those dates. All these prices are inclusive of 90 days' credit, worth about 3 to 4 cents.

19. Minas crude accounts for two-thirds of Pertamina's crude exports. Pertamina receives it as crude-in-kind from Caltex. 1/ Another quarter of Pertamina's crude exports are from its own Rantau field in North Sumatra. This is very light - about 45° API - and is exported to Japan. Its f.o.b. export price for this crude prior to April 1, 1971 ranged between \$1.93 and \$2.13 and was increased in stages to \$2.65 on April 1, 1972. The other crudes which Pertamina produces and exports are from the Bunju field in Kalimantan (33° API), and the Klamono field in West Iran (22° API). The f.o.b. export price for Bunju crude was raised from \$1.63 to \$2.60 on October 1, 1971 and to \$2.89 on April 1, 1972. That for Klamono crude, which has good characteristics in making lubricating oils, was correspondingly increased from \$2.00 to \$2.50 and \$2.85.

20. The private contractors followed suit and made corresponding increases in their own f.o.b. export prices. Caltex's f.o.b. price for export sales of Minas crude had been \$1.67 from July 1970 to March 31, 1971. This was raised to \$2.21 on April 1, 1971, \$2.60 on October 1, 1971 and \$2.96 on April 1, 1972. 2/

21. The f.o.b. export price of Indonesian crude oil is basically derived from three elements: (i) the realized f.o.b. price of an equivalent Middle Eastern crude; (ii) the freight advantage of Indonesia over the Middle East into the Japanese market, and (iii) a premium for the higher refined product worth of Indonesian crude, particularly for its very low sulphur content. This is analyzed below and in Table 3.

1/ Crude-in-kind is defined in paragraph 19 of Annex A to the last economic report (EAP-27a).

2/ These prices are gross of 120 days' credit - worth about 3 to 4 cents - which is granted in sales to third parties and to affiliates in which it has a 50% interest or less. This applies to virtually all its Eastern Hemisphere sales but not to its sales to the U. S. West Coast which are to affiliates. Caltex raised its f.o.b. price on June 1, 1971 for US West Coast Sales to \$2.35 per barrel but brought the price for sales there into line with that for sales elsewhere as from the price increase of October 1. Stanvac also increased its export prices for Minas crude from \$1.68 to \$2.18 per barrel on April 1, 1971, \$2.60 on October 1, 1971 and \$2.93 on April 1, 1972 with no extended credit terms. Finally, when crude production started in September 1971 from the Ardjuna and Cinta offshore fields, Pertamina and contractors priced their exports at \$2.60 per barrel inclusive of credit terms, with an increase to \$2.96 effective April 1, 1972 and higher in some spot sales. The crudes are again of very low sulphur content and of light quality (37-40° API).

Date of price calculations	Up to June 30, 1970	July 1, 1970	April 1, 1971	Oct. 1, 1971	April 1, 1972
	----- (US cents per barrel) -----				
Iranian Light (34°) realized f.o.b. price	138.0	146.0	173.6	179.0	185.0
Indonesian freight advantage	17.0	12.3	14.3	18.2	16.1
Premium for higher refined product worth of Minas crude	12.0	8.7	33.1	62.8	94.9
Minas f.o.b. export price	167.0	167.0	221.0	260.0	296.0

(i) Realized f.o.b. prices in Middle East

22. Separate agreements effective from November 1970 and the Teheran Agreement of February 1971 between Middle Eastern governments and foreign oil companies resulted in a major increase in posted prices and income tax rates for exports via the Persian/Arabian Gulf. The Geneva Agreement of January 20, 1972 increased the posted prices for such exports in compensation for international currency realignments to December 1971. Comparable agreements were made for oil exports from other major international loading ports. The tax-paid cost of Iranian Light - the Middle Eastern crude most widely imported into Japan - has consequently risen to about US\$1.55 per barrel from January 20, 1972, an increase of 54 cents since November 13, 1970. The producers' margin is added to the tax-paid cost to arrive at the realized f.o.b. prices of Persian/Arabian Gulf exports. The producers' margin for spot cargo sales of Iranian Light was about 37 cents per barrel in 1970. However, the slowdown in growth of the Japanese economy and hence of oil sales there appeared to have reduced it to roughly the 30 cents used in the projections. Margins for other crudes differ, in part reflecting their sulphur contents. The realized f.o.b. price in arm's length sales of Iranian Light crude to Japanese refiners has thus risen to about \$1.85 per barrel, an increase of about 47 cents since November 13, 1970.

(ii) Freight Advantage

23. Tankers moving crude from the Middle East to Japan are on the whole 160/300,000 d.w.t. in size and are usually chartered for five years or more, or owned outright by the international oil companies. Freight from Iran to Japan in this period has been about 45 cents per barrel. Tankers moving crude from Indonesia to Japan until now have been on the whole 60/80,000 d.w.t. in size, and freight has been about 29 cents per barrel. Thus the Indonesian freight advantage has been about 16 cents.

(iii) Low Sulphur Premium

24. During the mid-1960's Indonesian crude had sold for a discount in export sales to reflect the adverse value of its wax content for overseas refiners. However, electric utilities using crude oil directly for steam generation and modern refineries with heated storage tanks and vacuum distillation units are understood to find the wax no disadvantage and to the contrary to benefit from wax sales at good price, and the high wax content no longer penalizes the price of Indonesian crude.

25. In 1968, before the present concern about pollution, the average sulphur content in Japanese fuel oil was 2.32 per cent by weight. In early 1969 the Japanese government introduced environmental health standards needed to combat air pollution due to sulphurous oxides, and in December 1969 its Overall Energy Council recommended future maximum sulphur contents for fuel oils to meet these standards. Sulphur restrictions for fuel oil were announced for the fiscal year beginning April 1973, and in late 1971 proposals were made to stiffen these requirements by 1973 and 1975 for four types of area - "over-density, already polluted, precautionary, and non-polluted".

26. Of the main Middle Eastern crude oils only Murban crude from Abu Dhabi could meet even the specification in 1973 for non-polluted areas (1.37 per cent) and its total output in 1973 would be scarcely enough to supply all fuel oil (including crude oil directly burnt by power utilities) for such areas. Iranian crude has a relatively low sulphur content (1.35 per cent weight) but cannot meet the Japanese sulphur limitations for 1973. No known Middle East crude can meet the Japanese limitations proposed for 1975. Japanese fuel oil demand in 1973 is forecast at about 2.7 million b/d and in 1975 at about 3.2 million b/d. In mid-1972 Japan had capacity to desulphurize about 500,000 b/d of fuel oil to meet Japanese sulphur regulations and is expected to have about 800,000 b/d of capacity by end-1973. Hence there is a dearth of low sulphur fuel oil available for the Japanese market, and the price of Indonesian oil is benefitting. In late 1970, the premium for the higher refined product worth of Minas crude - essentially for its low sulphur content - was still only about ten cents per barrel over Iranian Light (Table 3). However, the price increases for Minas crude in April and October 1971 increased the premium to roughly 33 and 66 cents respectively, and the price increase in April 1972 brought the premium up to about 95 cents per barrel.

Future Trends in Indonesian Oil Export Prices

27. As for the future, the f.o.b. export price of Indonesian crude oil is assumed to continue to be based upon the realized f.o.b. price of Persian/Arabian crude, plus the freight advantage of Indonesian over

Middle East crude to Japan, plus the low sulphur premium. Future trends in these elements, particularly the low sulphur premium, are not easy to predict. In summary, they together indicate that the f.o.b. export price could remain at about \$3.00 per barrel from 1973 to 1976 and rise thereafter by a few cents each year. The calculation is given in Table 3. The projections of Government revenue and of oil exports are very sensitive to this price forecast.

(i) Realized f.o.b. prices in Middle East

28. Based upon the Teheran and Geneva Agreements, the f.o.b. tax-paid cost of Iranian Light crude will rise by about 7 cents per barrel on each January 1 of 1973, 1974 and 1975. These agreements expire on December 31, 1975. The mission's projections assume that the same provisions would continue through 1980. This seems the minimum likely increase, given the evident strength of producing versus consuming countries in the determination of prices.

29. The ongoing negotiations by Middle East members of OPEC, except for Iran, for participation of 25 per cent rising ultimately to 51 per cent in the companies producing oil in their countries could increase the tax-paid cost of such crude, to the extent that the producing companies buy back the government's share of oil production at a price higher than the arm's length price for such oil. For example, if a producing company has to buy back 20 per cent of total production from a government at the quarter-way price (between posted price and tax-paid cost), its tax-paid cost on total production would typically be increased by about 7 cents per barrel. The producer can be expected to attempt to pass this increase on to its customers. The principle clearly does not apply to joint-venture agreements or service contracts nor to Iran which nationalized its industry in 1951 with compensation. On June 24 the Shah of Iran announced that Iran had reached agreement with the consortium of oil companies operating there regarding the long-term development of the oil industry: Iran is not directly involved in the participation issue now under discussion at OPEC; the Consortium Agreement will be extended beyond its initial expiry date of 1979; the consortium will actively explore for and develop reserves to enable output to double to 8 million b/d; and, beyond the period of the Teheran Agreement, future prices will be in line with prices of a "basket" of commodities imported by Iran. The producers' margin is not easy to predict but is here assumed to continue at about 25-30 cents through 1980 for Iranian Light.

(ii) Freight Advantage

31. Freight from the Persian Gulf to Japan is projected to remain at about present levels (Worldscale 55) ^{1/} through 1975 but thereafter to increase gradually to about W65 by 1980. These rates take into account (i) recent and future expected increases in ship building costs, (ii) the consequent increase in freight rates in new charters compared with their preceding low rates, (iii) to a lesser extent higher bunker charges, and (iv) recent increases and expected future stability in insurance costs.

32. As for the voyage Indonesia-Japan, Caltex has just completed the expansion of the terminal facilities at Dumai, Sumatra to handle 150,000 dwt ships. New offshore storage and loading facilities for the Ardjuna and Cinta fields are being installed this summer and fall respectively and are designed to enable the loading of up to 140,000 dwt ships. So is the loading jetty for Pertamina's Djatibarang field, expected to start production in early 1973. The introduction of tankers of 100/150,000 dwt is likely to reduce the average freight from Indonesia to Japan to perhaps W 63 i.e. 26 cents per barrel during the years 1973-1975. This would be a saving of about 3-4 cents per barrel compared with the voyage by medium-sized tankers in use until now. From 1976 onwards, freight is predicted to rise gradually to about W 75 by 1980 for similar reasons as for the voyage Persian Gulf-Japan. Indonesia's freight advantage over the Middle East for oil supplies to Japan is therefore predicted to be about 18-21 cents per barrel during the next few years.

(iii) Low Sulphur Premium

33. Pertamina has shown bold commercial acumen in obtaining a premium of about 95 cents per barrel this April in its export sales of Minas crude to Japan. Its demonstration has induced the private contractors to follow suit in pricing of their own exports, and the price has thus far held firm.

34. The premium has risen from very little to nearly one dollar in just over a year. It has raised the export price by half from its level prior to April 1971 and accounts for one-third of the export price. The premium's future level is fundamental in forecasting the oil sector's contribution to future economic prospects. Yet its level is the most variable and unpredictable component of the export price. The premium

^{1/} Worldscale is a reference tariff, in terms of which current freight rates are expressed as a percentage. It was introduced on October 1, 1969, replacing the preceding reference tariff. It is published jointly by the International Tanker Nominal Scale Association, London, and the Association of Ship Brokers and Agents, New York. It is revised annually.

is clearly above its long-term ceiling which is equivalent to the cost of desulphurizing crude oil to meet Japanese specifications. This cost is hard to measure precisely, as little reliable information is published on such costs, desulphurization technology is advancing rapidly, and the cost per barrel is sensitive (i) to the sulphur content inherent in the raw material and specified in the finished product; and (ii) to the rate of depreciation charged on the plant. However, it is believed by the mission to be in the range of 20-40 cents per barrel of Iranian Light crude oil desulphurized in refineries to future standards thus far announced by the Japanese government. There is a good possibility that it may decide to make these standards stricter than those now announced. Such restriction would increase the above cost.

35. The current premium commanded by Indonesian oil therefore reflects insufficient capacity to desulphurize Middle Eastern oil for the Japanese market. The leadtime needed to bring in new facilities is roughly three years. However, the considerable size of funds needed to install sufficient capacity makes it unlikely that the bottleneck will be broken three years from now. As additional capacity become introduced, the premium will decline but at a rate difficult to predict. It is here assumed to decline gradually from 1973 to 1977 to a level of about 65 cents and to be supported at that level by a possible further stiffening of Japanese sulphur regulations over those already announced and over that foreseen above.

Retail Prices of Petroleum Products for Domestic Market

36. Retail prices of petroleum products sold in the Government's domestic marketing operation had remained unchanged since January 6, 1970 until the Government on April 1, 1972 raised the prices of both grades of motor gasoline by Rp. 5, gas oil by Rp. 1.50, and diesel oil and heavy fuel oil by Rp. 0.50 per litre. It did not change prices of the other products distributed on its behalf by Pertamina, i.e., aviation gasoline, aviation turbine fuel or kerosine.

III. VALUE OF OIL EXPORTS

37. The gross value of oil exports during 1971/72 was about US\$596.8 million, an increase of 34 per cent over 1970/71 when it was \$444 million. The gross value of oil exports during 1972/73 is now estimated at about US\$993 million, an increase of 66 per cent over 1971/72. This estimate is based upon estimated total output of 403.1 million barrels in 1972, from which 1.4 million barrels of contractors' losses, own use and change in stocks and 52.4 million barrels of pro-ratta deliveries for the domestic market are deducted, leaving the equivalent of some 351 million barrels of crude oil for export.

38. For the future, gross oil exports are projected to rise in value to about US\$1,770 million by 1976/77 but they decline thereafter to about US\$1,650 million by 1978/79. (See Table 5.) Since f.o.b. export prices are assumed to remain steady through 1976/77 and to increase slightly thereafter, the reason for the forecast decline in the value of gross oil exports lies in the decline in crude oil production which could ensue if new discoveries are not made and brought into production by then. The physical decline in future output and exports is illustrated in Table 2.

39. Net oil exports are calculated in Table 4. ^{1/} They are estimated at \$204 million in 1971/72, compared with \$126 million in 1970/71, and are estimated to rise to \$349.5 million in 1972/73. They are foreseen to rise to about \$580 million by 1976/77. Thereafter they could decline, reflecting a drop of about \$50 million in tax liability of foreign contractors, unless new reserves are discovered and brought into production by then or the decline rate in output from existing fields under contract of work is slowed down.

IV. SOURCES OF GOVERNMENT REVENUE

Government Revenue - General

40. Government revenues from petroleum are of three sorts: (a) the Government share of the profits from the crude petroleum production and marketing operations of the foreign oil companies under contracts-of-work and production-sharing contracts; (b) the Government tax on Pertamina's profits from its production, refining and domestic and foreign marketing operations; and (c) the Government "tax" on sales of petroleum products in the domestic market, which is the residual difference between total sales receipts and Pertamina's cost plus fee in acting as agent for the Government in the domestic supply and distribution operation.

Government Revenue from Foreign Contractors

41. Government revenue for 1971/72 from foreign oil companies operating under contracts of work and production-sharing contracts amounted to Rp 112.7 billion (US\$284.3 million) ^{2/}, a third of all Government revenues. This is an increase of 65% over the Rp 68.5 billion received in 1970/71 and results mainly from the increases in export price in 1971. Since output from areas under production-sharing contracts only began in 1971, the revenues in 1971/72 from such output amounted to only about Rp 1.7 billion. Table 5 shows the calculations for 1971/72 and 1972/73.

^{1/} The method of calculation is discussed in paragraph 38 of Annex A to the last economic report (EAP-27a) dated November 30, 1972.

^{2/} The basis for computing Government revenue from contracts of work and production-sharing contracts is explained in paragraphs 41-42 and 45 respectively of Annex A to the last economic report.

42. Government revenue for 1972/73 from foreign contractors is estimated at Rp 201.4 billion (US\$485.4 million), an increase of 79% over 1971/72 mainly because of an estimated 32% increase in average estimated export prices for 1972 and an estimated 24% increase in volume output. The growth of output from fields under production-sharing contracts would increase Government revenue by about Rp 13.0 billion, but most of the revenue growth (Rp 81.8 billion) would be brought in under contracts of work.

43. For the future, Government revenue from foreign contractors is forecast to jump again in 1973/74 to about Rp 249 billion. This increase of 24% over 1972/73 reflects essentially the growth of output expected from the fields in Sumatra operated under contracts of work and from the Ardjuna, Cinta and Attaka offshore fields and the corridor block in South Sumatra operated under production-sharing contracts. The average f.o.b. export price for crude oil and products is assumed at \$2.93 per barrel net of credit.

44. Calculations of the forecast for 1973/74 - 1978/79 are given in Table 6. Government revenue from foreign contractors is forecast to increase by an average 9% yearly to about Rp 320 billion in 1976/77. This lower growth rate results particularly from the assumptions that the export price will remain by and large unchanged and that output from new fields - now under development but not producing - will amount to about 300 million barrels but will be partly offset by a decline of about 21% yearly in existing fields under contracts of work (Table 2). In 1977/78 and 1978/79 such revenue is forecast to level out at about Rp 300 billion, assuming that the export price edges upward but that output from existing fields declines by a greater amount than that from new fields grows. This emphasizes the need for Indonesia to encourage (a) recovery of additional reserves from known fields, for example, by drilling extension wells and increasing the use of secondary recovery techniques, and (b) exploration.

45. Some of the assumptions made in forecasting Government revenue from foreign contractors are particularly sensitive. A variation of ten cents per barrel in the export price would cause a corresponding yearly variation in such revenue of about Rp 10 billion during the period 1973/74 - 1978/79.

46. An increase of ten million barrels' output (27,400 b/d) will correspondingly raise Government yearly revenue by about Rp 7 billion under contracts of work and by about Rp 4.5 billion under production-sharing contracts. If output from existing fields under contracts of work were to decline at 10% instead of the current forecast of 21% per annum from a peak in 1973, Government annual revenue in 1978 would be higher by Rp 47 billion. If sales volume in the domestic market and the corresponding pro-rata crude obligation were to increase one percent faster after 1971 than estimated in Table 7, the Government's net profit from domestic marketing by 1978/79 might be higher by Rp 10 billion, but its revenue from foreign contractors would be lower by Rp 1.4 billion than forecast here. Other assumptions including those on production costs for contracts of work are less sensitive.

Government Revenue from Bonus Payments by Contractors

47. To the above amounts of Government revenue from foreign contractors, bonus production payments from production-sharing contracts need to be added. The new Pertamina Law of 1971 requires Pertamina to transfer to the Government 60% of bonus revenues. Such revenues have now been defined to include only bonuses payable when production reached specified levels, not signature bonuses or payments for geological data which become part of Pertamina's general taxable income. The first revenues from this source are expected to accrue in 1973 (Rp 0.5 billion) and 1974 (Rp 1 billion) from the Attaka and Cinta fields respectively; no such contractual obligation applies to the Ardjuna field (Table 6).

Government Revenue from Pertamina's Overall Operation

48. Pertamina's income is derived partly from fees earned as agent for the Government in the domestic distribution of oil; the fees are for refining and marketing (10 cents each per barrel) and for the pro-rata crude it delivers to the Government (20 cents per barrel). It distributes solvents and other special products, bitumen, wax, lubricants and greases for its own account in the domestic market; exports on its own account (a) part of the crude oil produced from its own fields, (b) part of the crude oil obtained under crude-in-kind arrangements, and (c) products surplus to domestic market requirements refined from its own crude and crude-in-kind; and receives income from chartering freight to third parties. Operating revenue from the above sources and nonoperating revenue from signature bonuses and geological data payments constitute Pertamina's gross revenue subject to tax. Other sources of revenue include (a) the five percent of allocable income from production-sharing contracts which it retains, (b) the 40 per cent of production bonuses which it will retain when they become payable, and (c) dividends from Far East Oil Trading and other foreign and domestic affiliates. Pertamina is understood not to be liable to tax on the first item, though operating expenses financed from this source are not deductible in computing tax. Pertamina is not liable to tax on the second item and is believed not to be liable on the third, assuming that tax has already been paid by such affiliates.

49. Pertamina's costs incurred on its own account are those for exploration, production, refining, freight and head office, to the extent that these costs are not allocated to the Government's domestic distribution operation and reimbursed by the Government.

50. Its net revenue before depreciation was officially forecast for 1971 at US\$46.0 million. However, depreciation of US\$26.5 million was estimated to reduce the net profit before tax to US\$9.5 million and to result in a tax liability of about US\$5.7 million (Rp 2.4 billion) at the 60 per cent rate applicable as from 1971/72. Presumably because of rising operating costs and depreciation, Pertamina in fact paid Rp 1.5 billion. Its net revenue before depreciation was officially estimated in mid-1972 at US\$68.2 million. This reflects a sharp rise in Pertamina's exports from its own

production and in f.o.b. export prices, offset only in part by higher operating costs. Reflecting the growth in its capital expenditure programs, Pertamina's depreciation was officially estimated at US\$43.2 million. This would reduce the net profit before tax to US\$25.0 million and result in a tax liability of US\$15.0 million (Rp 6.2 billion). In fact Pertamina paid Rp 1.0 billion. It is expected to pay Rp 3.5 billion in 1973/74. The mission's projection of Government revenue assumes that Rp 6 billion is the minimum contribution which Pertamina would make thereafter through 1978/79.

51. Until 1971/72 inclusive, Pertamina's contribution to Government revenue was collected by the Director General of Taxes and shown as part of revenues from domestic corporation tax. As from 1972/73, it is collected by the Director General of Finance and included as part of revenues from foreign oil contractors.

Government Revenue from Domestic Oil Marketing

52. Mainline oil products are supplied and marketed in Indonesia by Pertamina, acting as the Government's agent. It collects the gross proceeds of marketing these products at Government-fixed retail prices and receives reimbursement of its basic costs plus a fee for conducting the domestic distribution operation. The Government retains the net profit from the operation ^{1/}. The Government's net profit from the domestic marketing operation increased from Rp 17.4 billion in 1969/70 to Rp 28.8 billion in 1970/71, reflecting the sharp increase in the retail prices of gasoline, kerosine and other products put into effect early in 1970.

53. The Government's net profit from domestic marketing in 1971/72 was only Rp 28.3 billion, slightly less than in 1970/71. On the one hand, it was assisted by (a) a rise of some 12% in sales volumes, (b) the shift of consumption from 79 octane to 87 octane gasoline whose price was Rp 5 per liter higher, and (c) the credit to the domestic operation resulting from the price increase in refined products exported as surplus to domestic market requirements. On the other hand, the operation's basic costs were increased by (a) the higher Rupiah cost of the foreign exchange component of operating costs resulting automatically from the Rupiah devaluation of August 1971, and (b) the higher price of crude-in-kind supplied as from April 1971 and October 1971.

54. The Government's net profit from domestic marketing in 1972/73 is now officially estimated at Rp 31.6 billion, because of (a) the rise expected in sales volumes, (b) the increase in April 1972 in the retail prices of motor gasoline, diesel oil and heavy fuel oil, and (c) the credit

^{1/} The operation is discussed in paragraphs 57-64 of Annex A to the last economic report (EAP-27a).

to the domestic operation resulting from the further price increase in April 1972 in heavy fuel oil. Furthermore, the inland transport cost allowed for premium grade gasoline was to be reduced in April 1972 from Rp 3 to Rp 1.20 per liter which was the 1971 cost for the lowest grade, previously used and now withdrawn from the market. On the other hand, the expected basic costs were increased by (a) the higher price of crude-in-kind, supplied as from April 1972, (b) a threefold increase in sea freight of crude supplied for domestic refining, (c) the assumption that products are delivered to the domestic market only from the older and presumably higher cost refineries and not from the new refineries of Sungei Pakning and Dumai, though in fact the latter supply at least gasoline and kerosine to the domestic market, and (d) increased wages and depreciation.

55. Projections of future revenues will have to be based on careful forecasts of sales volumes of each of the eight main products. The growth is likely to be different in each case. For example, now that the conversion from piston to turbine-engined aircraft is virtually completed, sales of aviation gasoline will probably remain stagnant but those of aviation turbine fuel will probably continue to grow strongly. Sales of premium grade gasoline can be expected to rise buoyantly but those of the best grade to rise more sharply, though from a far smaller base. Sales of gas oil are also likely to grow firmly both in automotive vehicles and in construction and manufacturing industries. So to a lesser extent are those of diesel oil and fuel oil, for example, in manufacturing and power generation. On the other hand, sales of kerosine - 43% of total sales in 1971 - are likely to reflect the slower growth in per capita income. A study of long-term future growth of the domestic market is being prepared by Pertamina with the assistance of consultants. Its results are expected later this year and need to be taken into account in the forthcoming preparation of the Government's next 5-year plan (1974/75 - 1978/79). Table 7 illustrates the possible effect on sales volume through 1980 of different growth rates for individual products. It comes out with a weighted average growth rate of 8.1% related to actual sales volumes in 1971. This forecast is taken as the basis of the future pro-rata crude obligation.

56. The above forecast results in a compound annual growth of 10.1% in gross revenue by 1978/79 from that officially estimated for the Government's marketing operation in 1972/73, at April 1972 prices unchanged (Table 8). The basic cost of the operation, inland transport costs, and pump margin are also foreseen to rise at 10.3 per cent p.a. for reasons outlined below. The net profit from domestic marketing is hence tentatively predicted here as rising to about Rp 62 billion in 1978/79, a compound yearly growth of 11 per cent over the Rp 31.6 billion now estimated for 1972/73.

57. A summary forecast of the basic cost, inland transport cost, and pump margin of the Government's domestic oil marketing operation is attempted in Table 9. By far the largest cost is the basic cost to

Pertamina in running the operation, and 70% of the basic cost is that of the crude oil input to local refineries. An attempt is made in Table 10 to forecast the crude input needed through 1978 to meet domestic sales requirements. With the commissioning in 1971 of the Dumai and Sungei Pakning refineries, and in 1975 of the proposed Tjilatjap refinery, Indonesian refineries appear prima facie to have capacity to process crude enough to meet all domestic sales of kerosine, except in 1977 and 1978 when some kerosine imports seem needed. On this basis the next major expansion could be required on stream in about 1979, assuming there is economic justification in minimizing product imports.

58. The mission's projection assumes that the f.o.b. export price would apply to Government crude from production-sharing contracts delivered to the domestic operation (see paragraphs on pro-rata arrangements). If this is correct, the cost of transferring such Government crude to the domestic operation could grow from nothing in 1972 to about \$120 million by 1978/79, or one-third of the basic cost. The effect would be to reflect to a larger extent in the cost of the domestic operation the international level of oil prices. Such an effect would be augmented to the extent that crude is imported and its landed cost invoiced to the domestic operation. The price at which the Government invoices crude to the domestic operation in principle does not matter, insofar as it has already obtained the crude at production cost plus a 20-cent fee and receives the net proceeds on the sale of the refined products, whether the proceeds are attributed all to the domestic marketing operation or in part to Government account elsewhere. In practice, however, the Government might be more likely to retain this profit rather than to pass it on as a subsidy to consumers if the crude were to be invoiced to the domestic marketing operation at the full f.o.b. export price instead of cost plus fee.

V. PERTAMINA'S CAPITAL INVESTMENT PROGRAM AND FINANCING

Introduction

59. Pertamina is well established as an integrated oil company and engages in all phases of the industry including exploration, production, refining, shipping and distribution. Until this year its capital investment program was under the general purview of the Minister of Mines. However, the new Pertamina Law of September 15, 1971 provides for the establishment of a Board of Commissioners to guide Pertamina's development 1/. This Board was appointed by President Suharto on March 1, 1972 and consists

1/ A summary of Pertamina's history and function and the Pertamina Law is given in paragraphs 1-7 of Annex A to the last economic report (EAP-27a).

of the Ministers of Mining (Chairman), Finance (Deputy Chairman) and Development Planning. They are responsible for directing Pertamina's policy, based on its budget, work program and investment proposals as recommended by Pertamina's five-member Board of Directors.

60. Pertamina's recent and possible future investment activities are described below. As already indicated, the magnitude of its investment operations is very large, and Pertamina has been obtaining a major part of the financial resources required by borrowing abroad on quite hard terms. Pertamina has established its credit abroad and is clearly in a position to borrow additional substantial amounts, albeit on hard terms. It is able to generate sufficient funds to meet its debt service obligations principally because for tax purposes the Government has accepted Pertamina's practice of depreciating those assets acquired since 1968 with foreign financing at rates equal to the debt repayment periods involved. The depreciation periods are, as a result, generally five years or less whereas the life of the assets and the normal depreciation periods applicable are much longer. The consequence is that Pertamina's corporate profit tax obligations to the Government are very much reduced. This technique of depreciating assets for tax purposes at the rate of debt payment in effect preempts Government revenue for Pertamina's investment program in a virtually automatic or hardly noticeable manner.

61. The effect is to reserves to Pertamina itself, rather than to the Government, decisions with respect to the use of a substantial part of the investment resources available to the economy. This creates the risk that Pertamina may undertake investments which, even if wise from Pertamina's point of view, may command lower priority than other investments which might be undertaken with the same resources. It means that the same criteria are not applied in the case of Pertamina's investment decisions as are applied elsewhere. It gives rise to the danger that relatively high risk and high cost investments may be undertaken which might better be undertaken by the foreign investors able and willing to do so or which might better not be undertaken at all. It seems desirable that Pertamina's investments should be judged by the same criteria as apply in other sectors of the economy and that, to the maximum extent possible, they be financed by long-term concessional credits from abroad. It is for this reason that the \$200 million credit offered by the Government of Japan for the development of the petroleum sector is to be welcomed provided that this credit substitutes for, rather than adds to, hard commercial credits and provided also, of course, that the investments financed are appropriately selected.

Exploration and Development

62. Pertamina on its own explores and produces in certain areas. In other areas it operates through contracts of work and production-sharing contracts, under which foreign contractors make all the investment required in return for a share of any oil which may eventually be produced. The Government's view has been that Pertamina should undertake exploration and

development operations at least where the risk might be judged to be not unduly high, although higher risk and higher cost exploration would best be left to foreign contractors. Pertamina's exploration and development program is therefore essentially onshore in accessible places: N. Sumatra, the Palembang area of S. Sumatra, Djatibarang in W. Java, and the Tandjung area of E. Kalimantan.

63. The policy of restricting Pertamina's exploration and development programs to easily accessible and geologically attractive places looks right. Considerable funds might otherwise be invested only too easily without resulting in commercially worthwhile production.

64. Pertamina plans to develop producing fields further and is considering the installation of secondary recovery techniques such as water flooding and gas injection. It bought \$20 million of drilling equipment in 1971 for use in the N. Sumatra and E. Kalimantan fields. This is being financed from Japanese commercial credits, repayable in crude over 5 years. Its main effort now is to develop the Djatibarang field. The present investment there is expected to result in production starting in early 1973 and building up initially to 60/70,000 b/d. It is being financed from three Japanese commercial credits, amounting to \$139 million, repayable in Djatibarang crude over 5 years. This is a substantial addition to the volume of Indonesia's external public debt and, *prima facie*, a rather costly investment. It raises the question whether further such developments should be undertaken by Pertamina itself or through foreign contractors.

65. Pertamina is now looking for gas reserves near Djakarta for use in power generation or town gas distribution, and in East Java for use in the Petrokimia fertilizer plant in substitution for heavy fuel oil. It also plans to supply natural gas to the proposed new fertilizer plant from its field under development at Tjirebon, W. Java. The incentive for finding gas has grown greatly this last year, insofar as its economic worth in domestic sales is that of low-sulphur fuel oil released thereby for export. There have been recent reports that consideration is being given in Indonesia to possible schemes to export liquified natural gas (LNG). Pertamina is understood to have signed a letter of intent with the Californian gas distribution utility Pacific Lighting to supply LNG over 25 years, starting in 1976, for use in southern California. It is also understood to be considering an LNG scheme with Japanese participation (Bridgestone and FEOT) for supplies of LNG to Japanese steel companies. Mobil is apparently sounding out Japanese interests with a view to a joint venture for the export of gas from the Arun reservoir in N. Sumatra.

Oil Supply and Service Bases

66. Offshore oil exploration and production activities have led to the establishment of four oil service and supply bases which are increasingly able to offer services hitherto provided from Singapore.

67. In May 1971, President Suharto inaugurated one of these bases on Batam Island, which is one of the Riau islands within Indonesia just south of Singapore. In November 1971 he also established by decree a Government Board, chaired by the President-Director of Pertamina, General Ibnu Sutowo, to plan the island's further development. In May 1972, Pertamina agreed with the U.S. firm Bechtel and the Japanese trading firm Nissho-Iwai to make a joint feasibility study of the possible establishment of an industrial estate on the island, including a free port. The development would include oil and general cargo marine terminals, airport, roads, utilities, recreation facilities and housing. The study contemplates that with this infrastructure private enterprise would undertake a variety of investments including processing industries and a refinery for external marketing of products (paragraph 74).

68. The three other service bases for offshore operations are at Balikpapan in E. Kalimantan operated by Pertamina, a second on Masalembu Island, Java Sea, operated by a U.S. oil contractor (Ashland Oil) and a third at Merak on the N.W. coast of Java, operated for Pertamina by a U.S. contractor (Santa Fe-Pomeroy). The Merak base is operated as a duty-free port and is designed to provide storage of oil well supplies and a convenient site for construction for offshore construction and mechanical repair facilities. Facilities under construction include a helicopter pad and an international and shore-to-ship telecommunication center. Subsequent expansion plans there include an airport for direct service by charter airlines and a dock for ocean vessels drawing up to 45 feet.

Pipelines

69. Pertamina completed a pipeline last year to take petroleum products from Tjilatjap to Maos in central Java and is arranging for its extension to Jogjakarta. It completed a submarine pipeline to enable the loading of large-sized crude oil tankers at Pangkalan Susu in N. Sumatra and is constructing others at Belawan in N. Sumatra and Djatibarang in W. Java.

Refining

70. Pertamina has owned and operated all refineries in Indonesia since January 1970 when it bought the Sungei Gerong refinery from Stanvac. It had bought Shell's three refineries - Pladju, Balikpapan and Wonokromo - in January 1966 and it already owned a small refinery at Pangkalan in N. Sumatra. Most of those refineries are old. Pertamina has therefore engaged in a major expansion of refining capacity, recently bringing on stream the Dumai and Sungei Pakning refineries in central Sumatra.

71. In late 1971, Pertamina commissioned an asphalt plant of about 60,000 tons per annum capacity at Pladju, South Sumatra and a grease plant at Tandjung Priok, Djakarta. It plans to build a small blending plant for lubricating oils at Tandjung Perak in East Java, importing base stocks until they become available from the proposed Tjilatjap refinery in Central Java.

72. This new 100,000 b/d refinery is expected to come on stream in 1975. Under heads of agreement in 1971, Shell undertook to provide finance up to \$100 million ^{1/}. However, there now appears to be uncertainty whether this arrangement will be pursued. Pertamina is now understood to be negotiating with the Japanese firms Mitsui, C. Itoh and Tomem with finance to be provided from the \$200 million, long-term loan offered by Japan to Indonesia (paragraph 92).

73. The next major expansion of refining capacity could be required on stream in about 1979, assuming there is economic justification in minimizing product imports (paragraph 57). There could conceivably be justification for refining for export, but it is not clear in Indonesian's circumstances that this would produce positive economic returns.

74. For its part, Pertamina held discussions with Japanese refining companies this year on the possibility of creating a Japanese consortium to finance, construct and operate an export refinery on Batam Island primarily to supply Japan. Advantages to Japan could include the avoidance of air pollution from refining in Japan, value added to the Indonesian domestic product, and the ability to export products surplus to Japanese requirements to neighboring countries in South East Asia. The advantages to Indonesia would be a modest amount of labor and service earnings together with tax revenues accruing to the government. The economic justification, timing and finance of the infrastructure and refinery project for Batam Island would, of course, be put to Pertamina's new Board of Commissioners for consideration.

^{1/} The deal is described in paragraphs 20-23 of Annex A to the last economic report.

Tanker Fleet

75. Pertamina has been building up its inter-island and ocean-going fleet. At end-1971 its fleet is believed to consist of 90 vessels amounting to 900,000 dwt (excluding 140 small vessels). They are either owned, operated under hire-purchase arrangements or chartered by Pertamina. By end-1971 it had received 18 out of 25 tankers, mostly about 5,000 dwt each, ordered from Norwegian yards under hire-purchase arrangements. In expansion of its fleet of ocean-going tankers - currently of the 30,000 to 43,000 dwt range - Pertamina ordered five 115,000 dwt tankers in 1971 from Norwegian yards.. It is also understood to be arranging for the delivery of three tankers each of 130,000 dwt for hire-purchase over 10 years from Swedish yards. The first and second ships would be delivered in 1975 and the third somewhat later. The price is believed to be upward of \$20 million per ship.

76. One aspect for careful consideration is the extent to which the acquisition of large tankers under hire-purchase arrangements may prove more costly forms of freight than the regular long-term charter of such sized vessels. For example, freight for the voyage Dumai-Yokohama would be 27-31 cents per barrel at the five-year charter rate of Worldscale 65-75 which can be envisaged for 100/150,000 dwt ships during 1976-1980. But the freight under the hire-purchase arrangements for these ships is reported to be W 100 or more, which would be 42 cents per barrel or more for the above voyage. Thus the cost to Indonesia for preferring to acquire such ships under hire-purchase terms could be equivalent to an increase of 11-15 cents per barrel in freight. This would correspondingly reduce the f.o.b. price, as there is no reason to suppose that the cost increase could be passed on in the c.i.f. price to Japanese buyers. The Board of Commissioners should review Pertamina's ocean-going and inter-island freight operations particularly in relation to outright and hire purchase arrangements, time and spot charters and the appropriate balance between them.

Inland Marketing

77. Pertamina has been actively expanding and modernizing its inland transport facilities as well as its inter-island tanker fleet to serve the domestic market. The rate of such investment in future would presumably depend primarily on the growth foreseen for domestic sales, currently under study (paragraph 55).

Petrochemicals and Fertilizers

78. Pertamina expects to bring the polypropylene plant at Pladju on stream in early 1973. Plans are under consideration to modify the older Pladju and S. Gerong refineries - both at Palembang - to make petrochemical feedstocks as well as some of their present output of mainline products.

79. Urea fertilizer is now produced at Palembang from natural gas feedstock by the state fertilizer corporation PUSRI; its plant is being expanded for completion by 1974, and Pertamina is constructing and will operate the required gas facilities. Construction of a second main fertilizer plant is under active consideration. It is likely to be owned and operated by Pertamina and be sited at Tjirebon, West Java, near the gas field which it is developing there. Financing is being requested from IDA and the Government of Japan.

80. Further investments in petrochemicals should be carefully assessed. Elsewhere in the world, such investments have recently shown, on the whole, poor economic returns on capital. The resources produced by oil need to be allocated in the best interests of the whole economy, and the rates of return on investments in as well as outside the sector should take the scarcity value of capital into account. In relation to oil-based petrochemical enterprise, also, Indonesia's circumstances differ from those of most producing countries, where supply greatly exceeds demand and the cost of feedstock is thus around bare production cost. Indonesia can export at premium prices every barrel of oil it can produce, so that the real cost of using oil as feedstock is and will continue to be about \$3.00 a barrel.

Head Office

81. Until recently, the services needed to support a large exploration and production program by foreign contractors have not been available in Indonesia. These services have therefore been provided abroad, particularly in Singapore and Australia. Pertamina has understandingly made great efforts to make such services available in Indonesia. In 1971 it opened the Oil Centre Building in Djakarta to provide office accommodation for foreign oil companies, and it has started construction of a 23-story Pertamina Tower in Djakarta to provide office accommodation for itself and foreign oil companies. In January 1972 it opened the Pertamina Central Hospital in Djakarta to give medical care to its staff and family, foreign oil contractors and diplomats, close relations, and the general public including the poor, in that order. It provided substantial assistance for an international joint embassy school which since September 1971 provides tuition for grades 1-12. For its part the Minister of Mines issued four decrees in March 1972 which give the Government some control over operations of foreign oil companies not hitherto registered in Indonesia, streamline procedures for employing foreigners, clarify existing rules on the use of locally made goods, and encourage companies thus far operating from Singapore and other countries to open offices in Indonesia.

Joint Ventures

82. Pertamina sells its crude oil exports to Japan through Far East Oil Trading Company, which it holds 50:50 with Japanese refining and public utility interests. For oil exports covered by the agreement this summer between the Governments of Indonesia and Japan, Pertamina will

supply crude through Japan Indonesia Petroleum Company, a new joint venture (paragraph 95).

83. The above ventures presumably require little investment from Pertamina. However, it has recently been investing heavily in other joint ventures which provide services for its oil activities. It operates its own fleet of aircraft and helicopters through P. T. Pelita Air Service, formed in January 1970; the company possessed 25 aircraft and 22 helicopters in February 1972 and is considering extending its service to foreign contractors and to Pertamina staff for tourism. It has an interest in the Hongkong firm Tugu Insurance. Since early 1971, it has formed the following joint ventures:

- (a) P. T. Nusantara Star Exploration, (a 50:50 venture with the U. S. firm Teledyne) to perform seismic exploration and data processing;
- (b) P. T. Pertamina Gulf, (with Gulf Oil) to handle storage and packaging of urea fertilizer imports in bulk at Tandjung Priok harbour, Djakarta;
- (c) P. T. Dumai Dockyard Indonesia, (a 60:40 venture with the Hongkong based Dumai Dockyard Limited), formed to take over a 20,000 ton floating dock from the Surabaya dock authority in East Java and to operate it at Dumai, Central Sumatra for the repair of Pertamina tankers;
- (d) a joint venture with the Australian firm Vicker Ruwolt Pty Ltd., for the supply of installation and machine tools, factory buildings, generating plants and manufacturing equipment; and
- (e) a joint venture with the Hongkong firm of Inter Agencies Limited to supply ships' stores and to provide warehousing and forwarding services for oil contractors.

84. Pertamina has also moved into the steel industry. In August 1970, it joined with the Government in setting up P. T. Krakatau Steel. The Government turned over the assets of the retarded steel project at Tjilegon, West Java and Pertamina was to provide any additional funds. The new enterprise is pursuing active plans for its completion and expansion. P. T. Krakatau Steel has completed the cold-wire drawing plant and hopes to erect the rolling mill as soon as funds become available. It has entered into a joint venture Krakatau Hoogovens International Pipe Industries Pty with the Dutch firm of Hoogovens and the Philippine firm of International Pipe Industries of Manila. This joint venture will manufacture spiral welded steel pipes at Tjilegon and planned to start production in the second half of 1972. Krakatau Steel has also placed a contract for a four high five stand cold rolling mill with Nippon Steel. The mill will convert imported controlled coil into GI and other sheet for tinning.

85. The above joint ventures raise the question how far Pertamina should be putting funds into services which could alternatively be provided by private service companies under contract to Pertamina and its oil exploration/production contractors. A joint venture does not necessarily have the same incentive to provide a competitive, low-cost service as a service company keen to please lest its contract not be renewed. The question also arises how far Pertamina should be investing outside the oil sector. In some instances the answers to the above questions could be positive but this is by no means necessarily so, and future proposals for joint ventures need careful review.

Source and Application of Funds, 1967-1971

86. All in all Pertamina's capital investment program - including working capital - has amounted to just under US\$500 million equivalent during the period 1967-1971. About two-thirds of this amount has been on exploration and production and one-fifth on refining. The program has accelerated year by year, so that investment in 1970 and 1971 account for 70 per cent of the total 5-year period. Pertamina has also paid about \$160 million of debt service, including interest payments, during these five years. Details of Pertamina's application of funds during 1967-1971 are shown in Table 11.

87. Pertamina has therefore had to raise about \$650 million to finance its capital investment program and debt service. It appears to have internally generated very roughly \$180 million, of which some \$10 million as net profit after tax on its own operations and \$170 million as depreciation of its assets.

88. During 1967-1971 Pertamina also drew down about \$220 million from commercial credits which it had obtained repayable over 2-12 years. It thus used about \$400 million from this source and internal cash generation. It is assumed here that the balance of \$250 million, needed to meet capital expenditure and debt service, must have been financed from short term commercial bank borrowing.

Source and Application of Funds, 1974-1978

89. Pertamina's capital expenditure likely in 1972 and 1973 could be in the order of \$280 million combined. It has plans on the drawing-board for capital investment thereafter capable of using all the funds which it may be allowed by its Board of Commissioners. What this might look like in the context of the next 5-year plan is hard to predict. However, it could be in the order of \$750 million, if it were assumed that: (i) exploration and development were restricted to about \$40 million yearly, (ii) two new refineries were built, one at Tjilatjap and one elsewhere, (iii) future tanker requirements were met mainly by charter arrangements, (iv) there were no major petrochemical investment other than fertilizers, and (v) there were no significant additional investment in Krakatau Steel, and (vi) no new large joint ventures after Krakatau Steel.

	<u>1974-1978</u> (US \$ Million)
Exploration and production	200
Pipelines	30
Refining	200
Shipping	90
Inland marketing	70
Fertilizer	110
Head office and joint ventures	<u>50</u>
	<u>750</u>

90. In addition, Pertamina is obliged to service about \$240 million of existing debt during 1974-1978. It is assumed to incur only a small debt service obligation during that period on funds borrowed after mid-1972. This depends in part on the terms on which the Government onlends to it the funds (a) borrowed from the Government of Japan for general oil development and (b) to be borrowed from multilateral/bilateral sources for the second fertilizer project and on the terms on which Pertamina borrows from other sources during the period. On the assumption that new debt service would amount to only \$10 million Pertamina might therefore have to raise about \$1,000 million to finance total capital expenditure and debt service during 1974-1978.

91. Pertamina's net profit after tax is assumed to improve to a total of roughly \$50 million over 1974-78, reflecting (i) the rise in gross proceeds when the Djabatibarang field comes into production and (ii) the lesser burden of yearly depreciaton as funds become borrowed on longer term than at present. Depreciation on existing assets is assumed at \$300 million, i.e. a somewhat higher than the debt service incurred during 1974-1978. Depreciation on assets which may be acquired from 1972-1978 is assumed to be taken at an average 10 per cent yearly, i.e. about \$200 million during 1974-78. It might be able therefore to generate internally about \$500 million, leaving a balance of \$500 million to be met from borrowing. Disbursement from existing borrowing would amount to \$60 million from the Japanese Government credit \$200 million. Pertamina might therefore need to find an additional \$190 million for capital expenditures including the fertilizer, steel, and Batam Island projects. Part of this is likely to be provided by credits from IGGI members to help finance the fertilizer plant.

1974-1978
(US\$ Million)

Application of Funds:

Capital expenditure		750
Debt service - existing		240
- possible new		<u>10</u>
		<u>1,000</u>

Source of funds:

Net profit after tax		50
Depreciation - existing assets	300	
- net assets	<u>200</u>	<u>500</u>

Borrowing:

- from existing commitments	60	
- from Government of Japan	200	
- from new sources (including aid)	<u>190</u>	<u>450</u>
		<u>1,000</u>

Finance from Government of Japan for Indonesian Oil Development

92. During President Soeharto's state visit to Tokyo in May two items of special aid outside the framework of the IGGI were agreed additional to Japan's regular assistance during the IGGI for 1972/1973. The details are to be spelled out in a formal bilateral agreement to be concluded before end-1972. The framework is as follows: The Government of Japan has agreed to lend 62 billion yen, equivalent to US\$200 million, for the development of the Indonesian oil sector. This is a Government-to-Government deal. The Government of Japan will lend the funds to the Government of Indonesia at 3 per cent per annum interest; repayment will be over 25 years including a grace period of 7 years. The Government of Indonesia will onlend the funds to Pertamina on commercial terms which have yet to be defined. The Japanese funds will be untied and can also be used to finance some local expenditure within Indonesia.

93. Exactly how the funds will be spent is not yet specified. The first tentative plan was that Pertamina would use these funds as follows:

\$ Million

Exploration and development of production, excluding the Djatibarang field	150
Domestic distribution facilities	35 - 40
Office buildings and other facilities for foreign oil contractors	10

94. Pertamina in turn will supply to Japan a total of 58 million kilolitres (50 million metric tons) of crude oil over a 10-year period starting in 1973 additional to the supply through existing commercial channels. Japan is thus assured of low-sulphur crude oil supplies by applying a part of its large foreign exchange reserves for the long-term development of Indonesian oil supplies. This averages 5.8 million kilolitres or 5 million tons yearly (100,000 b/d) and is planned at 3.5 million kilolitres or 3 million tons (60,000 b/d) in the Japanese FY 1973/1974. Deliveries are expected to rise to 150,000 b/d in 1976 and taper off thereafter. The price will be determined quarterly or half yearly before delivery and Japan will correspondingly prepay before delivery. Japan will advance a ceiling of \$100 million equivalent as pre-payment for oil delivered in the succeeding six-month period. The amount will be advanced at the beginning of the six-month period, repayable in crude during that period; it is expected never to be fully run down during the period.

95. Pertamina will supply the crude oil for the above deal not through Far East Oil Trading but through the Japan-Indonesia Petroleum Company, a new venture established for the purpose by Toyota Motor Sales Company and the Industrial Bank of Japan. It is capitalized at 500 million yen and the equity will be held 50 per cent by Pertamina, 26 per cent by Japanese oil refiners. Financing will be raised mainly by banks but also probably by public issues.

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INDONESIA: FORECAST OF CRUDE PRODUCTION, PRO-RATA DELIVERIES AND EXPORTS 1972 - 1980

	<u>1972</u>	<u>1973</u>	<u>1974</u>	<u>1975</u>	<u>1976</u>	<u>1977</u>	<u>1978</u>	<u>1979</u>	<u>1980</u>
	(million barrels)								
Production:									
Existing fields									
Contracts of Work	334.7	355.1	330.3	272.7	216.0	171.6	138.7	109.5	95.2
Production sharing contracts	27.2	76.7	89.4	100.4	106.1	87.6	73.0	65.7	54.9
Pertamina	<u>41.2</u>	<u>52.8</u>	<u>54.8</u>	<u>53.6</u>	<u>52.3</u>	<u>47.5</u>	<u>43.8</u>	<u>36.5</u>	<u>32.9</u>
Sub Total	403.1	484.6	474.5	426.7	374.4	306.6	255.5	211.7	183.0
New Fields									
Contracts of work	-	-	31.0	54.8	67.7	73.2	84.2	94.9	106.1
Production sharing contracts	-	-	52.9	127.7	226.9	240.9	277.4	288.4	322.1
Sub Total	403.1	493.7	558.4	609.2	669.0	620.7	617.1	595.0	611.2
Less pro-rata deliveries to domestic market									
Contracts of work	43.5	40.8	39.4	35.7	30.4	30.5	30.2	31.3	32.6
Production sharing contracts									
-contractors' obligation	0.4	1.1	2.1	4.1	6.3	7.3	8.9	10.4	11.9
-government supplement	3.1	8.8	13.4	20.7	29.3	33.6	38.5	43.8	49.2
Pertamina own production	<u>5.4</u>	<u>6.1</u>	<u>6.0</u>	<u>5.9</u>	<u>5.6</u>	<u>5.9</u>	<u>5.9</u>	<u>5.6</u>	<u>5.3</u>
	52.4	56.8	60.9	66.1	71.6	77.2	83.5	91.1	99.0
(Pro-rata percentage)	13.0	11.5	10.9%	10.9%	10.7%	12.4%	13.5%	15.3%	16.2%
Crude oil exports (including crude-in-kind)									
Contracts of work	291.2	314.3	321.9	291.8	253.3	214.3	192.7	173.1	168.7
Production sharing contracts									
Contractors-in-recovery of cost	10.9	34.3	56.9	91.2	133.2	131.4	140.2	141.6	150.8
-exports from 35% share	5.3	16.9	27.8	43.8	63.6	61.7	64.7	64.0	67.3
Pertamina-exports from 5% share	7.5	24.7	42.0	68.3	100.6	94.5	98.1	94.3	97.8
Pertamina - export from own fields	<u>35.8</u>	<u>46.7</u>	<u>48.8</u>	<u>47.8</u>	<u>46.7</u>	<u>41.6</u>	<u>37.9</u>	<u>30.9</u>	<u>27.6</u>
Total Exports	350.7	436.9	497.4	542.9	597.4	543.5	533.6	503.9	512.2

INDONESIA: FORECAST OF CRUDE PRODUCTION, PRO-RATA DELIVERIES AND EXPORTS 1972 - 1980

	<u>1972</u>	<u>1973</u>	<u>1974</u>	<u>1975</u>	<u>1976</u>	<u>1977</u>	<u>1978</u>	<u>1979</u>	<u>1980</u>
	(million barrels)								
<u>Production-sharing contracts</u>									
Production	27.2	85.8	142.3	228.1	333.0	328.5	350.4	354.1	377.0
less 40% allowed to contractors to cover costs	10.9	34.3	56.9	91.2	133.2	131.4	140.2	141.6	150.8
Oil to be shared	16.3	51.5	85.4	136.9	199.8	197.1	210.2	212.5	226.2
Pertamina's share @ 65%	10.6	3.5	55.5	89.0	129.9	128.1	136.6	138.1	147.0
less Government supplement for domestic market	3.1	8.8	13.4	20.7	29.3	83.6	38.5	43.8	49.2
Pertamina/Government crude available for exports	7.5	24.7	42.0	68.3	100.6	94.5	98.1	94.3	97.8
Government receives 60% of oil	(9.8)	(30.9)	(51.2)	(82.1)	(119.9)	(118.3)	(126.1)	(127.5)	(135.7)
Contractor's share @ 35%	5.7	18.0	29.9	47.9	69.9	69.0	73.6	74.4	79.2
less pro-rata deliveries to domestic market (except on ARCO's 35% share)	0.4	1.1	2.1	4.1	6.3	7.3	8.9	10.4	11.9
Contractors' exports	5.3	16.9	27.8	43.8	63.6	61.7	64.7	64.0	67.3
ARCO's production is assumed at	13.2	39.4	51.1	51.1	51.1	43.4	36.9	31.4	26.7

Source: Mission estimate

Table 3

INDONESIA: ACTUAL AND FORECAST REALISED FOB PRICES ON IRANIAN LIGHT CRUDE OILS, 1970-1980

	1970	1971		1972	1973	1974	1975	1976	1977	1978	1979	1980	
Effective date of price increase:													
Iranian Light	1953	Nov 11, 1970	Feb 15, 1971	June 1, 1971	Jan 20, 1972	Jan 1, 1973	Jan 1, 1974	Jan 1, 1975	Jan 1, 1976	Jan 1, 1977	Jan 1, 1978	Jan 1, 1979	Jan 1, 1980
Minas		July 1, 1970	Apr 1, 1971	Oct 1, 1971	Apr 1, 1972	Apr 1, 1973	Apr 1, 1974	Apr 1, 1975	Apr 1, 1976	Apr 1, 1977	Apr 1, 1978	Apr 1, 1979	Apr 1, 1980
Date of price calculation	Jan 1, 1970	Jan 1, 1971	Apr 1, 1971	Oct 1, 1971	Apr 1, 1972	Apr 1, 1973	Apr 1, 1974	Apr 1, 1975	Apr 1, 1976	Apr 1, 1977	Apr 1, 1978	Apr 1, 1979	Apr 1, 1980
	(US cents per barrel)												
Iranian Light (34°) realised fob price a/	138.0	146.0	173.6	179.0	185.0	191.8	198.7	205.8	213.0	220.5	228.1	236.0	244.0
Add: Indonesian freight advantage to Japan b/													
Chang Island-Yokohama	17.0	44.0	46.0	48.0	44.5	44.5	44.5	44.5	46.0	47.6	49.1	50.9	52.7
Less Dumai-Yokohama	30.0	31.7	31.7	29.8	28.1	28.3	28.3	26.3	27.2	28.2	29.2	30.2	31.2
Net break at Dumai	17.0	12.3	14.3	18.2	16.1	16.2	18.2	18.2	18.8	19.4	19.9	20.7	21.5
Less	155.0	158.3	187.9	197.8	201.1	210.0	216.2	224.0	231.8	239.9	248.0	256.5	265.5
Add: Premium for higher refined product worth o. Minas crude c/	12.0	8.7	33.1	62.8	94.9	90.0	83.1	75.0	68.2	65.1	65.0	64.5	64.5
Minas (35°) fob export price	167.0	167.0	221.0	260.0	296.0	300.0	300.0	300.0	300.0	305.0	313.0	321.0	330.0

Notes:

a/ Under the Tehran Agreement of February 15, 1971 the base postings for the Gulf exporters of Abu Dhabi, Iran, Iraq, Kuwait, Qatar and Saudi Arabia were increased on February 15, 1971, by 33c per barrel, rising on June 1, 1971 and on each January 1, 1973-1975 by 2½% for inflation plus 5c for general escalation. They also rise by 0.5c for every degree below 40° down to 30°API and by 2c for freight disparities.

Under the Geneva Agreement of January 20, 1972 posted prices for the above Gulf exporters were increased that date by 8.49% to compensate for the international currency realignment of December 1971. The increase is close to the revaluation of sterling to the US dollar; sterling is the currency used for oil revenue payments by most Gulf exporters other than Saudi Arabia. The Agreement includes a parity index, designed to compensate for another major realignment in average exchange rates for currencies of nine industrial countries with US dollar; the projections assume no change in the index.

The Teheran and Geneva Agreements expire on December 31, 1975. Projections thereafter assume that the same provisions would continue through 1980.

Realised fob prices in 1970 and 1971 are approximately those paid by Japanese refineries. They include about 4.5 cents representing 90 days' credit. The latest increase of 11.7 cents in tax-paid cost - which resulted from the Geneva Agreement of January 20, 1972 - is understood to have been passed on to Japanese refiners only in part (about 6 cents). The producers' margin of 30 cents is assumed to continue through 1980.

b/ Freight was equivalent to following percentages of Worldscale reference tariffs published for 1970 and 1972 and is forecast to be equivalent to following percentages of Worldscale tariff published for 1978:

Chang Island-Yokohama	W65	W53	W61	W63.6	W55	W55	W55	W55	W57	W59	W61	W63	W65
Dumai-Yokohama	W78	W81.5	W81.5	W76.6	W68	W62	W62	W63	W65	W68	W70	W72	W75

c/ Premium is basically for low sulphur content.

Table 4

INDONESIA: FORECAST OF GROSS AND NET OIL EXPORTS, 1971/72 - 1980/81

	1971/72	1972/73	1973/74	1974/75	1975/76	1976/77	1977/78	1978/79	1979/80	1980/81
	Preliminary Actual	Estimate	(US \$ Million)							
Tax liability of contractors ^{a/} 100% of Production bonuses	284.3	485.2	600.4	680.8	722.7	771.3	712.4	719.1	710.6	747.7
	-	-	2.0	3.5	-	3.5	-	2.0	-	2.0
Sub-total	284.3	485.2	602.4	684.3	722.7	774.8	712.4	721.1	710.6	749.7
Less: CPI's payment of tax obligation in surplus portion rupiah, limited to foreign exchange of pro-rata crude for which CPI was paid in rupiah ^{b/}	1.5	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
	282.8	483.2	600.4	682.3	720.7	772.8	710.4	719.1	708.6	747.7
Less: Contractors' tax liability settled in kind ^{a/}										
a) Deliveries of crude-in-kind to domestic market	16.6	101.4	136.5	137.3	130.0	124.6	108.0	91.2	130.9	132.3
b) Sea freight of crude and products ^{c/}	12.6	8.5	9.6	9.8	10.9	11.7	12.1	12.6	14.0	14.9
c) 60% of pro-rata crude fee, payable in rupiahs and withheld against contractors' tax obligation ^{c/}	5.1	5.4	5.0	5.0	4.7	4.4	4.7	4.6	5.0	5.3
	64.3	115.3	151.1	152.1	145.6	140.7	124.8	108.4	149.9	152.5
Net foreign exchange earnings from contractors	218.5	367.9	449.3	530.2	575.1	632.1	585.6	610.7	558.7	595.2
Less: Pertamina's foreign exchange needs for domestic market										
a) Inter-island fleet ^{c/}			44.4	45.6	50.7	54.4	56.2	58.2	65.0	69.2
b) Refined product imports ^{a/}			-	-	-	-	7.2	16.0	6.0	8.8
c) Refining at S. Pakning ^{b/}	4.8	-	-	-	-	-	-	-	-	-
		23.4	44.4	45.6	50.7	54.4	63.4	74.2	71.0	78.0
		344.5	404.9	484.6	524.4	577.7	522.2	536.5	487.7	517.2
Add: Net foreign exchange earnings from Pertamina's production, refining and marketing operations	7.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Net foreign exchange earnings of oil sector (Net oil exports)	204	349.5	409.9	489.6	529.4	582.7	527.2	541.5	492.7	522.2
Compare: Gross oil exports ^{d/}	596.8	993.0	1277.9	1472.3	1607.0	1768.3	1630.5	1643.5	1597.4	1664.7

Notes: ^{a/} Derived from Table 6
^{b/} Based upon actual data for 1971/72, and official estimate for 1972/73.
^{c/} Based upon actual data for 1971/72, official estimate for 1972/73 and pro-rated thereafter to total cost (foreign & local) of that item as forecast in Table 2.
^{d/} Plus is the product of fob export price (projected in Table 3) and the equivalent of crude oil exports including crude-in-kind (projected in Table 2).
 The crude exports are assumed to be crude output less the crude oil equivalent of products consumed in the domestic market.

Source: Mission estimate

GOVERNMENT REVENUES FROM FOREIGN OIL CONTRACTORS 1971/1972 AND 1972/73

	1971					1972				
	Jan-March	April-June	July-Sept	Oct-Dec	Total	Jan-Mar prelim. actual	April-June prelim. actual	July-Dec Estimated	Total	
	(Millions of barrels)					(Millions of barrels)				
Production										
CPI	64.2	63.2	68.1	67.2	262.8	71.1	76.3	160.0	307.4	
PTSI	4.6	5.4	6.3	6.7	22.9	6.9	6.8	13.6	27.3	
Production-sharing contracts	-	0.3	1.0	3.2	4.5	6.1	5.1	16.0	27.2	
Pertamina a/	8.6	8.7	8.8	9.2	35.3	9.4	9.6	22.2	41.2	
	77.5	77.6	84.2	86.3	325.6	93.5	97.8	211.8	403.1	
Production - less losses, own use and change in stocks										
CPI	65.4	62.7	66.6	67.5	262.2	70.0	76.3	161.1	307.4	
PTSI	4.5	5.2	6.1	6.5	22.2	6.6	6.8	13.9	27.3	
Production-sharing contracts (of which ARCO)	-	0.3	1.0	3.2	4.5	6.1	5.1	16.0	27.2	
Pertamina	8.6	8.7	8.8	9.2	35.3	9.4	9.6	22.2	41.2	
	78.5	76.9	82.5	86.3	324.2	92.1	97.8	213.2	403.1	
Less pro-rata deliveries to domestic market					(@ 15.1%)				(@ 13.0%)	
CPI	11.0	9.5	10.0	9.2	39.7	8.7	9.6	21.7	40.0	
PTSI	0.7	0.8	0.9	1.0	3.4	0.9	0.8	1.8	3.5	
Production-sharing contracts b/	-	-	0.2	0.5	0.7	0.8	0.6	2.1	3.5	
- contractors' obligation	(-)	(-)	(-)	(0.1)	(0.1)	(0.1)	(0.1)	(0.4)	(0.4)	
- government supplement	(-)	(-)	(0.2)	(0.4)	(0.6)	(0.7)	(0.5)	(1.9)	(3.1)	
Pertamina	1.3	1.3	1.3	1.4	5.3	1.2	1.2	3.0	5.4	
	13.0	11.6	12.4	12.1	49.1	11.6	12.3	28.6	52.4	
Crude oil exports (including crude-in-kind)										
CPI c/	54.4	53.2	56.5	58.3	222.5	61.3	66.7	139.4	267.4	
PTSI	3.8	4.4	5.2	5.5	18.9	5.7	6.0	12.1	23.8	
Production-sharing contracts:	-	0.3	0.8	2.7	3.8	5.3	4.5	13.9	23.7	
Contractors- in recovery of costs	(-)	(0.1)	(0.4)	(1.2)	(1.7)	(2.4)	(2.0)	(6.5)	(10.9)	
- exports from 35% share d/	(-)	(0.2)	(0.2)	(0.6)	(1.0)	(1.2)	(1.0)	(3.1)	(5.3)	
Pertamina- exports from 65% share e/	(-)	(-)	(0.2)	(0.8)	(1.0)	(1.7)	(1.5)	(4.3)	(7.5)	
Pertamina	7.3	7.1	7.3	7.8	30.0	8.3	8.4	19.2	35.8	
	65.5	65.3	70.0	71.3	275.1	80.7	85.5	184.6	350.7	
F.o.b. Export Price:	(\$ per barrel)					(\$ per barrel)				
-CPI (S. Hemisphere)	1.64	2.18	2.18	2.56		} 2.56	} 2.91	} 2.91	} 2.83	
-CPI (US West Coast) e/	1.70	2.21	2.35	2.60						
-PTSI	1.684	2.182	2.215	2.56		2.61	2.91	2.91	2.84	
-Production sharing	-	1.316	2.512	2.58		2.60	2.91	2.91	2.83	

GOVERNMENT REVENUE FROM FOREIGN OIL CONTRACTORS, 1971/72 AND 1972/73
(US \$ per barrel)

	1971/72					1972/73				
	April-June	July-Sept	Oct-Dec	Jan-March	Total	April-June	July-Sept	October-March	Total	
	(US \$ million)					(US \$ million)				
General contractors	0.152	0.161	0.146	0.160	0.135	0.148	0.15	0.15	0.15	
Pertamina	0.864	1.150	1.062	1.224	1.090	0.73	1.00	1.00	0.912	
	(US \$ per barrel)					(US \$ per barrel)				
Gross revenue from crude oil exports										
CPI	82.8	117.2	125.2	118.6	480.8	156.9	194.1	405.7	756.7	
PTSI	6.4	9.6	11.3	14.3	41.6	14.9	17.5	35.2	67.6	
Production-sharing contracts	-	0.6	2.0	7.0	9.6	13.5	13.1	40.4	67.0	
Sub-total: foreign contractors	96.2	127.4	138.5	169.9	532.1	185.3	224.7	481.3	891.3	
Pertamina	12.2	16.1	16.4	20.0	64.7	21.3	24.4	55.9	101.6	
Total	108.4	143.5	154.9	189.9	596.8	206.6	249.1	537.2	992.9	
Less General Costs										
- CPI	8.3	8.7	8.3	9.3	34.6	9.1	10.0	20.9	40.0	
- PTSI	3.3	5.1	5.5	6.7	20.6	3.8	6.0	12.1	21.9	
Allocable income										
CPI	81.5	108.5	116.9	133.3	446.2	147.8	4.1	384.8	716.7	
PTSI	3.1	4.6	5.8	7.6	21.1	11.1	11.5	23.1	45.7	
P-sharing contracts (60% of output)	-	0.4	1.2	4.2	5.9	9.5	8.9	27.9	46.3	
Total	84.6	113.5	123.9	145.1	473.1	168.4	204.5	435.8	808.7	
Government revenue from foreign contractors	50.8	58.1	74.5	90.7	283.9	101.0	122.7	261.5	485.2	
Exchange Rate	378	378/415 ^{a/}	378/415 ^{a/}	415		415		415	415	
Government Revenue from foreign contractors	19.1	25.2	29.9	37.6	112.7	41.9	50.9	108.5	201.4	

(Rupiah per US dollar)

(Rupiah per US dollar)

(Rupiah billions)

(Rupiah billions)

Sources: Ministry of Finance
Bank Indonesia
Pertamina

a/ Includes Lembras

b/ To calculate contractors' obligation, the pro-rata percentage (15.1% in 1971) is applied to their 35% share of allocable crude excluding ARCO and not to total output. Hence the Government/Pertamina has to deliver the balance from its 65% share of allocable crude

c/ About 30 million barrels of CPI's exports were to the US West Coast and were priced at \$1.70 fob January-March, \$2.21 April-May, \$2.35 June-September, and \$2.60 October-December, no credit being granted. The additional revenue is included below.

d/ Net of pro-rata crude deliveries

e/ Of this amount \$13.9 million were transferred by Pertamina in September 1971 and converted at Rp 415 per US \$ 1, the rate applicable as from August 24

f/ During a quarter when the exchange rate is adjusted, Pertamina's rupiah remittances are computed at the exchange rate prevailing when the services or crude-in-kind are delivered to Pertamina. From July 1 to August 23 about \$25.2 million of foreign contractors' tax liability are estimated to have been settled in this way at Rp 378 per US \$ 1.

Table 6

INDONESIA: FOREIGN GOVERNMENT OIL REVENUE 1971/72 - 1980/81

	1971/72	1972/73	1973/74	1974/75	1975/76	1976/77	1977/78	1978/79	1979/80	1980/81
	a/	b/								
<u>Government share per barrel</u>										
<u>from Contracts of Work</u>										
	(US Dollars per barrel)									
Export price	2.165	2.827	2.925	2.96	2.96	2.96	3.00	3.08	3.17	3.25
Less general cost	0.229	0.212	0.22	0.22	0.22	0.22	0.22	0.22	0.22	0.22
Net operating income	<u>1.936</u>	<u>2.615</u>	<u>2.705</u>	<u>2.74</u>	<u>2.74</u>	<u>2.74</u>	<u>2.78</u>	<u>2.86</u>	<u>2.95</u>	<u>3.03</u>
Tax @ 60%	1.162	1.569	1.623	1.644	1.644	1.644	1.668	1.716	1.770	1.818
	(T\$ Million)									
<u>Government Revenue from Foreign Contractors</u>										
Contracts of Work c/	280.4	457.4	510.1	529.2	479.7	416.4	357.5	330.7	306.4	306.7
Production-sharing contracts d/	3.5	27.8	90.3	151.6	243.0	354.9	354.9	388.4	404.2	441.0
	<u>283.9</u>	<u>485.2</u>	<u>600.4</u>	<u>680.8</u>	<u>722.7</u>	<u>771.3</u>	<u>712.4</u>	<u>719.1</u>	<u>710.6</u>	<u>747.7</u>
	(Rupiah Billion)									
<u>Government Revenue in rupiah equivalent</u>										
Government Revenue from Foreign Contractors	112.7	201.4	249.2	282.5	299.9	320.1	295.6	298.4	294.9	310.3
Government's 60% share of production bonuses	-	-	0.5	1.0	-	1.0	-	0.5	-	0.5
Pertamina's tax liability e/	-	1.0	3.5	6.0	6.0	6.0	6.0	6.0	6.0	6.0
	<u>112.7</u>	<u>202.4</u>	<u>253.2</u>	<u>289.5</u>	<u>305.9</u>	<u>327.1</u>	<u>301.6</u>	<u>304.9</u>	<u>300.9</u>	<u>316.8</u>

- Notes: a/ For details see Table 5
b/ For details see Table 5
c/ This is the product of the above tax per barrel and of export volumes (projected in Table 2)
d/ This is the product of the export price (projected in Table 3) and of the Government's 60% share of allocable oil (projected in Table 2)
e/ Net taxable income includes revenue from signature bonuses & geological data payments. The Government Budget included Pertamina's tax contribution (up 1.5 billion in 1971/72) until 1971/72 with tax payments by other domestic corporations but as from 1972/73 with revenue from foreign oil contractors.

Source: Mission estimate

Table 7

INDONESIA: DOMESTIC SALES OF PETROLEUM PRODUCTS

ACTUAL 1968-1971 AND FORECAST 1972-1980

	1968 Actual	1969 Actual	1970 Actual	1971 Actual	1972 Official estimate	1973 Forecast	1974	1975	1976	1977	1978	1979	1980	Compound Annual Growth			
														1969/1968 Actual	1970/1969 Actual (percent change)	1971/1970 Actual	1980/1971 Forecast
Aviation gasoline	30.1	29.7	22.1	22.9	25.0	23.0	23.0	23.0	23.0	23.0	23.0	23.0	23.0	- 1.3	-25.6	+3.6	-
Aviation turbine fuel	55.0	71.5	112.6	152.8	135.0	202.1	232.4	267.2	307.3	353.4	406.5	467.4	537.5	+30.0	+57.5	+35.7	+15.0
Motor gasoline							(million	litres)									
Super 98	-	0.8	7.2	15.9	17.3	22.9	27.5	33.0	39.6	47.5	57.0	68.4	82.1	00	large	+120.8	+20.0
Premium	10.8	30.0	52.4	1276.4	1741.8	2002.3	2202.5	2422.8	2665.1	2931.6	3224.7	3547.2	3901.9	+177.8	} + 5.0	} + 7.1	+10.0
Regular	1423.3	1429.8	1492.1	378.4	-	-	-	-	-	-	-	-	-	+ 0.5			-
Kerosine	2291.6	2705.5	2724.2	3009.1	3099.2	3254.6	3384.8	3520.2	3661.0	3807.5	3959.8	4118.2	4282.9	+ 18.1	+ 0.7	+ 10.5	+ 4.0
Gas oil	704.9	711.9	871.3	1096.3	1133.4	1375.2	1540.2	1725.0	1932.0	2163.9	2423.6	2714.4	3040.1	+ 1.0	+22.4	+ 25.8	+12.0
Diesel oil	334.3	301.0	351.5	375.9	453.8	438.4	473.5	511.4	552.3	596.5	644.2	695.8	751.4	- 10.0	+16.8	+ 6.9	+ 8.0
Fuel oil	637.5	590.9	611.6	651.0	852.2	787.7	866.5	953.1	1048.4	1153.3	1268.6	1395.5	1535.0	- 7.3	+ 3.5	+ 6.4	+10.0
Total Sales	5487.5	5871.1	6245.0	6978.7	7457.6	8106.2	8750.4	9455.7	10228.7	11076.7	12007.4	13029.9	14153.9	+ 7.0	+ 6.4	+ 11.8	+ 8.1

(million barrels)

Total Sales	34.5	36.9	39.3	43.9	46.9	51.0	55.0	59.5	64.3	69.7	75.5	81.9	89.0
Crude oil equivalent ^{a/}	38.3	41.0	43.6	48.8	52.3	56.7	60.9	66.4	71.6	77.2	83.6	91.1	99.0

Note: a/ This is the pro-rata crude obligation for the domestic market, which assumes a 10% refinery fuel and loss.

Source: Pertamina, 1968 - 1972
Mission estimate, 1973 - 1980

INDONESIA : SUMMARY FORECAST OF NET PROFIT FROM GOVERNMENT'S DOMESTIC OIL MARKETING OPERATION, 1972-1980

	Price effective April 1, 1972 (Rp./litre)	1972	1973	1974	1975	1976	1977	1978	1979	1980	Compound Annual Growth 1980/1972 %
		Official estimate in mid-1972	(Rp billion)								
Gross Revenue											
Aviation gasoline	35.0	0.88	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	
Aviation turbine fuel	30.0	4.05	6.06	6.97	8.02	9.22	10.60	12.20	14.02	16.13	
Motor gasoline											
Super 98	40.0	0.67	0.92	1.10	1.32	1.58	1.90	2.28	2.74	3.28	
Premium	35.0	58.8	70.08	77.09	84.80	93.28	102.61	112.86	124.15	136.57	
Kerosine	10.0	31.0	32.55	33.85	35.20	36.61	38.08	39.60	41.18	42.83	
Gas oil	14.0	15.4	19.25	21.56	24.15	27.05	30.29	33.93	38.00	42.56	
Diesel oil	8.5	3.8	3.73	4.02	4.35	4.69	5.07	5.48	5.31	6.39	
Fuel oil	6.5	5.4	5.12	5.63	6.20	6.81	7.50	8.25	9.07	9.98	
		120.1	138.52	151.03	164.85	180.05	196.86	215.41	235.88	258.55	+ 10.1%
Less Costs											
Basic cost	a/	79.39	88.98	96.45	111.39	126.45	133.37	141.52	160.36	172.93	+ 10.2%
Inland transport		3.48	4.08	4.48	4.93	5.43	5.98	6.60	7.31	8.08	
Pump margin		2.64	3.04	3.35	3.69	4.07	4.48	4.94	5.44	5.99	
		85.51	96.10	104.28	120.01	135.95	143.83	153.06	173.11	187.00	+ 10.3%
Net Profit from domestic market		34.54	42.42	46.75	44.84	44.10	53.03	62.35	62.77	71.55	+ 9.5%
		(Rp per litre)									
Gross Revenue		16.10	17.09	17.26	17.43	17.60	17.77	17.94	18.10	18.27	+ 1.6%
Less:											
Basic cost		10.65	10.98	11.02	11.78	12.36	12.04	11.75	12.31	12.22	
Inland transport		0.47	0.50	0.51	0.52	0.53	0.54	0.55	0.56	0.57	
Pump margin		0.35	0.38	0.38	0.39	0.40	0.40	0.41	0.42	0.42	
Total cost		11.47	11.86	11.92	12.69	13.29	12.98	12.75	13.29	13.21	+ 1.8%
Net profit		4.63	5.23	5.34	4.74	4.31	4.79	5.19	4.82	5.06	+ 1.2%

Notes: a/ See footnote b/ to Table 9

b/ Government's estimate of net profit from domestic market in 1972 was subsequently revised to Rp 31.6 billion.

Source: Mission estimate

INDONESIA: FORECAST OF COSTS OF GOVERNMENT'S DOMESTIC OIL MARKETING OPERATION, 1972-1980

BASIC COST	Cost (Rp per barrel)	1972	1973	1974	1975	1976	1977	1978	1979	1980
		Official estimate	(US \$ million)							
Pro-rata deliveries										
Contracts of Work - cost	0.216	9.8	8.8	8.5	7.7	6.6	6.6	6.5	6.6	7.1
- fee	0.20	9.0	8.2	7.9	7.1	6.1	6.1	6.0	6.3	6.5
Pertamina/Lemigas output										
- cost	1.482	13.4	9.0	8.9	8.7	8.3	8.7	8.7	8.3	7.9
- fee	0.20	1.8	1.1	1.2	1.2	1.1	1.1	1.2	1.1	1.1
Production-sharing contract:										
- contractors' obligation	0.20	0.2	0.2	0.4	0.8	1.2	1.5	1.8	2.1	2.4
- government supplement	export price a/	-	26.0	39.7	61.3	86.7	100.8	118.9	138.8	159.9
Sub-total Pro-rata crude		34.2	53.3	66.6	86.8	110.1	124.8	143.1	163.4	184.9
Crude-in-kind	export price a/	101.6	136.5	137.3	130.0	124.6	108.0	91.2	130.9	132.3
Crude imports	c&f price	-	5.4	6.0	33.7	50.1	52.0	53.8	55.7	57.8
		<u>135.8</u>	<u>195.2</u>	<u>209.9</u>	<u>250.5</u>	<u>284.8</u>	<u>284.8</u>	<u>288.1</u>	<u>350.0</u>	<u>375.0</u>
Sea Transport of Crude Oil	0.415	31.8	37.2	38.9	44.2	47.3	47.1	47.1	53.8	56.4
Refining - cost	0.53	48.7	56.4	59.0	66.4	71.7	71.4	71.4	81.6	85.4
- fee	0.10	9.1	10.6	11.1	12.5	13.5	13.5	13.5	15.4	16.1
		<u>57.8</u>	<u>67.0</u>	<u>70.1</u>	<u>78.9</u>	<u>85.2</u>	<u>84.9</u>	<u>84.9</u>	<u>97.0</u>	<u>101.5</u>
Sea Transport of Products	0.503	25.0	27.7	27.7	29.9	32.3	35.1	38.0	41.2	44.8
Inland Marketing - cost	0.331	15.6	16.9	18.2	19.7	21.3	23.1	25.0	27.1	29.5
- fee	0.10	4.7	5.1	5.5	6.0	6.4	7.0	7.6	8.2	8.9
		<u>20.3</u>	<u>22.0</u>	<u>23.7</u>	<u>25.7</u>	<u>27.7</u>	<u>30.1</u>	<u>32.6</u>	<u>35.3</u>	<u>38.4</u>
Product Imports										
Kerosine	3.85	18.1	-	-	-	-	5.0	10.0	-	-
Gas oil	2.60	5.6	-	-	-	-	2.2	6.0	6.0	8.8
		<u>23.1</u>	<u>-</u>	<u>-</u>	<u>-</u>	<u>-</u>	<u>7.2</u>	<u>16.0</u>	<u>6.0</u>	<u>8.8</u>
Surplus										
Gasoline	2.00	2.0	8.0	7.0	10.6	11.6	8.0	4.2	6.2	3.8
Diesel oil	2.00	2.0	1.6	0.2	2.0	1.4	-	-	-	-
Fuel oil	2.73	99.3	125.1	130.7	143.2	157.6	159.0	161.5	190.7	204.4
		<u>(103.3)</u>	<u>(134.7)</u>	<u>(137.5)</u>	<u>(160.8)</u>	<u>(172.6)</u>	<u>(167.0)</u>	<u>(165.7)</u>	<u>(196.9)</u>	<u>(208.2)</u>
Total Basic Cost		191.3	214.4	232.4	268.4	300.7	322.2	341.0	386.4	416.7
Kupiah equivalent of Basic Cost		79.39	88.98	96.45	111.39	126.45	133.7	141.52	160.36	172.93

FINANCIAL RECORD OF COSTS OF GOVERNMENT'S DOMESTIC OIL MARKETING OPERATION, 1972-1980

	<u>Cost</u> (. per barrel)	<u>1972</u> Official estimate	<u>1973</u>	<u>1974</u>	<u>1975</u>	<u>1976</u>	<u>1977</u>	<u>1978</u>	<u>1979</u>	<u>1980</u>
<u>INLAND TRANSPORT</u>										
Aviation gasoline	3.00	0.08	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07
Aviation turbine fuel	3.00	0.41	0.61	0.70	0.80	0.92	1.06	1.22	1.40	1.61
Motor gasoline : Super 98	3.00	0.05	0.07	0.08	0.10	0.12	0.14	0.17	0.21	0.25
Premium	1.20 ^{b/}	2.09	2.40	2.64	2.91	3.20	3.52	3.87	4.27	4.68
Kerosine	0.20	0.62	0.65	0.68	0.70	0.73	0.76	0.79	0.82	0.86
Gas oil	0.20	<u>0.23</u>	<u>0.28</u>	<u>0.31</u>	<u>0.35</u>	<u>0.39</u>	<u>0.43</u>	<u>0.46</u>	<u>0.54</u>	<u>0.61</u>
		3.48	4.08	4.48	4.93	5.43	5.98	6.60	7.31	8.08
<u>PUMP MARGIN</u>										
Motor gasoline : Super 98	1.75	0.03	0.04	0.05	0.06	0.07	0.08	0.10	0.12	0.14
Premium	1.50	<u>2.61</u>	<u>3.00</u>	<u>3.30</u>	<u>3.63</u>	<u>4.00</u>	<u>4.40</u>	<u>4.84</u>	<u>5.32</u>	<u>5.85</u>
		2.64	3.04	3.35	3.69	4.07	4.48	4.94	5.44	5.99

Notes: a/ See Table 3

b/ Assumes 1979 cost for regular grade gasoline, now withdrawn and replaced in greater volume by premium grade. Continuance of the 1971 cost of \$2.5 per litre for premium gasoline would reduce net profit in 1972 by \$3.14 billion and more in subsequent years.

Source: Mission estimate

INDONESIA: FORECAST OF AVAILABILITY AND DISPOSAL OF CRUDE AND PRODUCTS FOR DOMESTIC MARKET, 1971 - 1980

	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980		
	Actual											
	(million barrels)											
PRODUCT DISPOSAL												
a/												
Domestic Sales												
Gasoline	10.7	11.2	12.9	14.2	15.6	17.1	18.9	20.6	22.9	25.2		
Kerosine	19.9	20.3	21.7	22.7	23.8	25.0	26.2	27.5	28.8	30.3		
Gas oil/Diesel oil	9.2	10.0	11.4	12.7	14.0	15.6	17.4	19.3	21.5	23.8		
Fuel oil	4.1	5.4	5.0	5.4	6.0	6.6	7.3	8.0	8.8	9.7		
Total sales	43.9	46.9	51.0	55.0	59.5	64.3	69.7	75.5	81.9	89.0		
Product Exports b/												
Gasoline	-	1.0	4.0	3.5	5.3	5.8	4.0	2.1	3.1	1.9		
Gas oil/diesel oil	0.6	1.0	0.8	0.1	1.0	0.7	-	-	-	-		
Fuel oil & misc.	34.9	38.4	45.0	47.0	53.3	57.4	56.4	55.7	64.0	66.5		
Total exports	35.5	40.4	49.8	50.6	59.6	63.9	60.4	57.8	67.1	68.4		
PRODUCT AVAILABILITY												
b/												
Product Imports												
Kerosine		4.7	-	-	-	-	1.3	2.6	-	-		
Gas oil		2.5	-	-	-	-	1.1	3.0	3.0	4.4		
Total imports		7.2	-	-	-	-	2.4	5.6	3.0	4.4		
Crude Yield												
Refinery Output c/	Indonesian	Kuwait										
	(%)	(%)										
Gasoline	15.9	22.8	12.2	12.4	16.9	17.7	20.9	23.0	22.9	22.9	26.0	27.1
Kerosine	20.4	8.6	15.7	15.9	21.7	22.7	23.8	25.0	24.9	24.9	28.8	30.3
Gas oil/diesel oil	11.5	15.2	10.2	10.4	12.2	12.8	15.0	16.4	16.3	16.3	18.5	19.4
Fuel oil & misc.	47.1	48.5	40.9	41.4	50.1	52.4	59.3	64.0	63.7	63.7	72.8	76.2
Total output	94.9	95.0	79.0	80.1	100.9	105.6	119.0	128.4	127.8	127.8	146.1	153.0
Add fuel and loss	5.1	5.0	10.7	10.8	5.4	5.7	6.4	6.9	6.9	0.9	7.6	8.2
Crude input	100.0	100.0	89.7	90.9	106.4	111.3	125.3	135.2	134.7	134.7	153.9	161.2
Compare Refinery Capacity d/			94.0	127.0	111.3	111.3	135.3	135.3	135.3	135.3	168.3	168.3
(thousand barrels per stream day)												
Refinery Capacity e/	205	335	335	335	410	410	410	410	410	510	510	

INDONESIA: FORECAST OF AVAILABILITY AND DISPOSAL OF CRUDE AND PRODUCTS FOR DOMESTIC MARKET, 1971-1980

Page 2 of 2

	<u>1971</u> Actual	<u>1972</u>	<u>1973</u>	<u>1974</u>	<u>1975</u>	<u>1976</u>	<u>1977</u>	<u>1978</u>	<u>1979</u>	<u>1980</u>
SOURCE OF CRUDE	(million barrels)									
Pro-rata deliveries f/										
Contracts of work	43.1	45.1	40.0	39.4	35.7	30.4	30.5	30.2	31.3	32.6
Pertamina's output	5.2	9.0	6.1	6.0	5.9	5.6	5.9	5.9	5.6	5.3
Production-sharing contracts:										
-Contractors' obligation	-	1.0	1.1	2.1	4.1	6.3	7.3	8.9	10.4	11.9
-government supplement	0.7	-	8.8	13.4	20.7	29.3	33.6	38.5	43.5	49.2
Sub-total Pro-rata crude ^{g/}	49.1	55.1	56.8	60.9	66.4	71.6	77.2	83.6	91.1	99.0
Crude-in-kind from contracts of work		35.8	46.0	46.4	43.9	42.1	36.0	29.6	41.3	40.7
Imports of Burgan and Kuwait crude		-	3.6	4.0	15.0	21.5	21.5	21.5	21.5	21.5
Total Refinery input	83.7	90.9	106.4	111.3	125.3	135.2	134.7	134.7	153.9	161.2
Sub-total Pro-rata crude		76.6	69.6	93.8	105.6	113.9	113.5	113.5	129.7	135.8

Notes:

- a/ Domestic sales are derived from Table 7
- b/ Product exports and imports are assumed to be the difference between refinery output and domestic sales.
- c/ Indonesian refineries are assumed to process crude enough to meet all domestic sales of kerosine, except in 1977 and 1978 when refinery capacity appears insufficient and some kerosine imports seem needed. They are assumed to run on Indonesian crude, supplemented through 1974 by Burgan crude from Kuwait sulphur fuel oil from domestic crudes for domestic sales.
- d/ Assumes 330 days on stream per year.
- e/ 75,000 BPSD of capacity are to be phased out on account of age; 50,000 BPSD of this is assumed out in 1973 and 25,000 BPSD out in 1975. The proposed Tjilatjap refinery is planned to come on stream in 1975, and just for this projection another of 100,000 BPSD is assumed for 1977 in product imports are to be minimized.
- f/ Pro-rata crude deliveries are estimated in Table 2
- g/ Under contracts of work Pertamina can and does elect to buy up to 20% of contractors' output at fob export price. Pertamina processes part in local refineries to the extent that pro-rata deliveries and imports are insufficient, and exports the balance.

Source: Mission estimate

Application of Funds - 1968-1971
(US million)

	1967		1968		1969		1970		1971		1967-1971	
	Ex	Pos-1	Ex	Pos-1	Ex	Pos-1	Ex	Pos-1	Ex	Pos-1	Ex	Total
APPLICATION OF FUNDS												
<u>Capital Expenditure</u>												
Exploration & production	5.1	7.7	12.0	12.0	73.1	91.0	15.8	42.7	102.9	135.8	241.2	320.2
Pipelines	0.1	0.2	0.2	0.4	10.2	10.8	0.2	0.3	18.5	20.3	29.6	32.0
Refining	0.2	0.4	-0.2	-	8.6	10.5	86.6	89.1	1.6	5.4	96.8	105.4
Inland marketing	-0.5	-0.5	44.1	44.5	-	-	13.9	22.4	1.2	9.8	58.7	76.2
Shipping	-	-	-	-	3.7	4.0	8.2	8.6	13.5	14.2	25.4	26.8
Unit I	11.5	13.1	-47.2	-47.0	-40.3	-37.4	-	-	-	-	-76.0	-74.3
	17.7	21.0	35.9	42.9	55.6	72.2	122.5	163.1	137.8	186.3	375.6	486.4
Debt Service	27.5	27.5	28.0	28.0	25.4	25.4	35.9	35.9	43.8	43.8	160.6	160.6
	45.2	48.5	63.9	70.9	81.0	98.3	164.5	199.0	181.6	230.3	536.2	647.0
SOURCE OF FUNDS												
Net Profit after tax	-	2.0	-	2.5	-	3.0	-	3.0	-	2.5	-	13.0
Depreciation	27.5	28.0	28.0	29.0	25.4	27.0	35.9	38.0	53.9	60.0	170.7	182.0
Disbursement of borrowings	-	-	-	-	19.1	19.1	71.9	71.9	123.2	123.2	214.2	214.2
	27.5	30.0	28.0	31.5	44.5	49.1	107.8	112.9	177.1	185.7	384.9	406.2
Deficit on expenditures	17.7	18.5	35.9	39.4	36.5	49.2	56.7	86.1	4.5	44.6	151.3	240.8

- Notes**
- a/ This is believed to include working capital.
 - b/ This reallocation of assets is understood to result from the merger in 1968 of Permina, much of whose assets were in N. Sumatra, now Unit I, and Pertamina into Pertamina.
 - c/ Includes both interest payments and principal repayments
 - d/ Mission estimate
 - e/ Mission's estimate is based on Pertamina's method of depreciating (i) assets acquired before 1968 at standard rates and (ii) assets, acquired thereafter with foreign financing, at rates equal to the debt service on such financing.
 - f/ Deficit is presumably financed from short-term commercial credit.

Source: Ministry of Mines
Bank of Indonesia
Mission estimate

ANNEX 6

EXPORT TRENDS, 1971-1978

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EXPORT TRENDS, 1971 - 1978I. INTRODUCTION

1. This annex is an attempt to project by main commodities Indonesia's non-oil exports through 1978 to the end of the Second Repelita. A summary of these projections is presented in Table 1.

2. It has already been noted that during the sixties a shift in the composition of Indonesia's exports away from traditional agricultural commodities has been taking place. One of the main contributions an exercise such as this can make is to forecast relative magnitudes so that this changing export composition can be clarified and assessed. The implication of the projections presented here is that this shift, which has been significant, will continue unabated during the seventies (see Table 2). In 1965 nine traditional agricultural commodities ^{1/} comprised 83 per cent of total non-oil exports, by 1971 they had decreased to 56 per cent, and by 1978 they are projected to account for only 36 per cent. Moreover, beyond 1978 this trend is expected to continue. If oil is added to the picture this decline is even more severe, the appropriate percentages being about 54 per cent in 1965, 31 per cent in 1971 and 17 per cent in 1978.

Table 2: COMPOSITION OF INDONESIA'S NON-OIL EXPORTS

	<u>%</u> <u>1965</u>	<u>%</u> <u>1971</u>	<u>%</u> <u>1978</u>
Nine traditional agricultural commodities	83.1	55.5	36.2
Minerals	9.2 ^{/1}	10.1	13.6
Lumber	.5	23.1	36.0
Other	<u>7.2</u>	<u>11.3</u>	<u>14.2</u>
TOTAL	100.0	100.0	100.0

/1 Includes tin exports only.

Source: Bank of Indonesia - Financial Bulletin
May 1972, Table 7B
Mission estimates (see Table 1).

1/ Rubber, palm oil, palm kernel, tobacco, coffee, tea, copra, copra cake and pepper.

Table 1
 INDONESIA - Preliminary - Export Projections 1970-1978
 (Millions US\$)

	1970 ^{1/} Actual	1971 ^{1/} Actual	1972	1973	1974	1975	1976	1977	1978	Average per annum growth rate 1971-78
I. Traditional Agricultural Products										
Rubber	259.2	223.0	222.1	223.7	228.6	234.8	247.2	263.3	276.1	3.1
Tobacco	11.5	19.6	20.5	27.2	23.8	25.3	25.9	26.6	27.0	4.7
Coffee	65.5	54.9	64.4	70.5	71.6	72.5	75.2	77.9	81.1	5.7
Palm oil	36.5	46.2	47.5	48.2	47.1	44.4	47.2	48.6	48.4	0.6
Palm kernels	5.1	5.6	5.1	5.8	6.4	6.9	7.4	7.8	7.9	5.1
Copra	29.3	14.3	9.3	4.1	1.4	-	-	-	-	-
Pepper	3.1	24.0	24.5	25.0	25.5	26.0	26.5	27.0	27.6	2.0
Copra cake	5.8	11.7	11.0	12.5	13.1	13.8	14.5	15.2	15.9	4.5
Tea	17.7	28.1	29.3	29.3	29.3	30.2	31.7	33.2	34.9	3.2
Total Traditional	433.7	427.4	433.7	446.3	446.8	453.9	475.6	497.6	518.9	2.8%
II. Minerals (Excluding oil)										
Tin	62.1	60.0	62.7	65.6	68.3	71.2	74.1	76.3	78.8	4.0
Bauxite	5.9	5.8	5.8	5.8	5.8	5.8	5.8	5.8	5.8	0.0
Iron sand	-	1.1	1.7	1.7	1.7	1.7	1.7	1.7	1.7	6.4
Copper	-	-	-	50.0	55.0	60.0	60.0	60.0	60.0	-
Nickel	8.3	9.7	12.7	15.9	18.5	9.9	26.0	41.0	47.0	25.2
Other minerals	1.42 ^{2/}	1.52 ^{2/}	1.5	1.6	1.6	1.6	1.7	1.7	1.7	1.8
Total Minerals	77.7	78.1	84.4	140.6	150.9	150.2	169.3	186.5	195.0	14.0%
III. Lumber										
Logs (non teak)	99.4	168.0	222.0	308.0	368.0	384.0	400.0	391.2	382.6	12.5
Softwood (non teak)	2.7	3.0	3.0	4.0	14.7	24.0	27.0	37.7	52.8	50.5
Teak logs	2.9	3.0	3.0	4.0	6.0	8.0	10.8	11.3	11.8	21.8
Plywood and veneers	-	-	-	-	12.0	25.0	37.5	49.1	64.3	-
Pulpwood	0.1	0.2	0.3	0.4	0.8	1.0	1.0	1.0	1.0	26.0
Miscellaneous non wood forest products	3.8	4.1	4.0	4.0	4.0	4.0	4.0	4.0	4.0	-0.4
Total lumber	108.9	178.3	232.3	320.4	405.5	446.0	480.3	494.3	516.5	16.4%
IV. Other										
Fish	5.3	17.2	20.0	23.3	27.2	31.6	36.8	42.9	50.0	16.5
Maize	2.8	11.2	14.0	17.3	21.5	26.6	33.0	40.9	50.0	23.8
Cassava	7.6	13.0	14.6	16.3	18.1	20.0	21.0	22.0	23.7	8.6
Peanuts	3.6	4.1	5.0	6.1	7.4	9.1	10.4	11.9	13.6	18.7
Soybeans	0.1	0.1	0.3	0.7	0.1	1.3	1.9	2.7	3.9	-
Other	39.6	41.1	42.2	43.7	45.7	48.5	51.5	56.0	62.3	6.1
Total other	59.0	86.7	96.1	107.4	120.0	137.1	154.6	176.4	203.0	12.9%
Grand total ^{3/}	739.0 (679.3)	792.0 (710.3)	846.5	1014.7	1123.2	1187.2	1279.8	1354.8	1433.4	8.8%

^{1/} 1970 and 1971 figures are taken from Indonesian Financial Statistics - Monthly Bulletin - May 1972 Table 7B - Bank of Indonesia except for:

- a. Bauxite, iron sand, copper, nickel - based on estimates of Department of Mining.
- b. Lumber - based on data from FAG, Indonesian Department of Forestry and IIRU Industrial Projects Department.
- c. Maize, cassava, fish - based on Bank of Indonesia tabulation of E3 forms as of April 29, 1972.

^{2/} "Other minerals" is estimated by subtracting the exports of the main minerals as reported by the Department of Mining from the total minerals reported in the E3 forms of April 29, 1972. This procedure was used because figures in Table 7C seem to overestimate exports in the second half of 1971. Therefore, 1971 minerals (excluding tin) are estimated at \$18.1 million. A similar procedure was used to estimate 1970 "other minerals" although the reported inconsistencies were smaller. Appropriate adjustments were made to total exports for those 2 years.

^{3/} In 1970 and 1971 totals are actual Bursa receipts which were higher by \$59.7 and \$21.5 millions respectively than can be accounted for by commodity returns (bracketed figures). The bracketed figures include the following adjustments to the totals reported in Bank Indonesia Monthly Bulletin Table 7B:

- a. US\$4.3 million is added to 1970 and US\$5.8 is added to 1971 for higher lumber estimates
- b. US\$1.7 million is added to 1970 and US\$4.6 is subtracted from 1971 - see footnote 2.

3. The continuing decline in the traditional agricultural commodities' share in exports is caused both by their slow growth and by the very rapid growth of lumber, minerals and a few agricultural commodities such as fish and maize. Lumber is projected to grow at an average annual rate of over 16 per cent, reaching \$516 million by 1978 and accounting for 36 per cent of non-oil exports. Large exports are forecast for both copper and nickel; together they should exceed \$100 million by 1978 making mining a dynamic export sector that will grow at an average annual rate of about 14 per cent and will represent 14 per cent of exports by 1978. Of the other commodities two in particular should register substantial growth over the period - fish and maize. Their combined export value by 1978 is set at about \$100 million, and together with a few other smaller but rapid growth commodities such as cassava, peanuts, and soyabeans, will result in a 12.9 per cent p.a. growth for the "Other" commodity group.

4. One effect of these various trends is that Indonesia should experience a respectable growth of its non-oil exports. Total non-oil exports are projected to increase from \$792.0 million in 1971 to \$1433 million by 1978 - resulting in an average annual growth rate slightly under 9 per cent.

5. A second and important implication of these forecasts, and one that is gaining considerable attention by government officials, is the employment and income distribution effect. The traditional agricultural commodities particularly rubber and copra are an important source of income and employment to a large number of rural families. Yet it is these commodities that have the bleakest prospects and as a group are forecast to grow at only 2.8 per cent p.a. - well below the average export and g.d.p. performance expected. On the other hand, lumber, minerals and fisheries, where significant growth is expected to occur, and which combined will account for almost three quarters of the total growth of non-oil exports to 1978, perform poorly in the employment and income distribution areas. To some extent, agricultural commodities such as maize, cassava, peanuts and soyabeans, from which fairly rapid export growth is expected, will compensate rural incomes for the poor performance expected of the traditional exports. The commodity exports that had a significant smallholder contribution ^{1/} in 1971 amounted to about \$362 million, 47 per cent of exports; and by 1978 these will amount to about \$500 million, 35 percent of exports. They will have an average annual growth 4.7 per cent - substantially less than for total exports.

6. Another important implication of this shift in export composition is that the really dynamic sectors involve fairly large amounts of foreign investment and, like oil exports, will result in a substantially lower net export value. This is particularly true for exports of minerals, lumber, and fish.

^{1/} These include rubber, copra, copra cake, tobacco, pepper, maize, cassava, peanuts, soyabeans and other.

7. Also noteworthy is the continuing reorientation of Indonesia's exports to a major buyer: Japan. In 1960 exports to Japan accounted for only 4 per cent of total exports (including oil); by 1970 this had increased to 29 per cent. When one examines the specific commodities Japan is buying and will buy from Indonesia, it is evident that this trend will be more pronounced in 1970's. Japan is the major buyer of oil, timber and some minerals as well as fish and maize - the very commodities where substantial growth is expected to occur. If one includes only these commodities, non-oil exports to Japan should exceed \$600 million 1/ by 1978, over 40 per cent of non-oil exports. This proportion increases to almost 60 per cent 2/, if gross oil exports are included.

II. TRADITIONAL AGRICULTURAL EXPORTS

Rubber

8. Indonesia's largest non-oil export in 1971 continued to be rubber. About 800 thousand tons were exported; smallholders accounted for about two-thirds of total exports, the rest being produced on large estates; earnings amounted to \$223 million.

9. During the 1970's Indonesia's rubber production is estimated to expand at only about half the rate of world supply. Although most of Indonesia's recent growth in production has come from the smallholder sector, future growth will be derived mainly from the estates. The smallholder sector is in a state of general neglect; little or no replanting has taken place; use of improved clones is nonexistent, and low prices received by the farmer have encouraged him to switch to other activities. The effects of the proposed IDA credit to smallholders will only begin to have an effect on production by the late 1970's. In these circumstances only marginal increases in output for the smallholder sector can be forecast. The situation of the government estates, due to rehabilitation efforts made in the last few years is more favorable, and including the additional output resulting from three IDA credits made to rubber estates, government-estate production is expected to double by 1978. With small increases in the output of private estates and assuming a 10 per cent increase in the domestic consumption of rubber, total exports of rubber are projected to increase at an average annual rate of 2.75 per cent.

10. As a result of extensive replanting and new planting of rubber areas with the new high yielding clonal material, the world rubber output has expanded rapidly in the last few years. This rate of expansion is expected to be further stepped up in the coming years, when, according to the

1/ Assumes that 82% of lumber exports, 50% of copper exports, and 100% of fish, maize, bauxite, nickel and iron sands go to Japan in 1978.

2/ Assumes that 73.5 per cent of oil export go to Japan in 1978.

estimates prepared by the International Rubber Study Group (IRSG), world output would reach 3.9 million tons in 1975 and 4.8 million tons by 1980, an average annual growth of over 5 per cent. Based on expected technical changes in the production of synthetic rubbers and a virtually unchanged rate of elastomer demand, the IBRD Trade Policies and Export Projections Division projects the price of RSSI (c.i.f. N.Y.) to be 17 ¢/lb in mid-seventies, about a cent lower than the 1971 price, and that for the period 1975-80 a price of about 19 ¢/lb. The rate of price change implicit in these projections has been applied to the unit of value of Indonesia's projected exports.

11. The Indonesian Government has embarked on a program to increase exports of technically specified rubber (SIR) in conformity with international market trends. At present technically specified rubber accounts for 15-20 per cent of exports and no premium is being paid for Indonesian SIR. However, as its quality becomes established in world markets it may command a modest premium. To allow for this, from 1975 an additional half of 1 per cent p.a. was added to the unit value of Indonesia's rubber exports. The net effect of these considerations is that rubber exports by 1978 are projected to increase by 24 per cent to \$276 million.

Tobacco

12. Indonesia exported about 19,600 tons of tobacco in 1971 valued at almost \$20 million. Estimates of both production and export volumes vary widely. The estimated export of tobacco in 1978 is 27.1 thousand tons. This assumes that:

- planted area will increase to 182 thousand hectares by 1978 as estimated in the National Fertilizer Study;
- the yield rises from 4.1 quintals per hectare to 5.8 by 1978 - the low yield assumptions of the IBRD Agricultural Sector survey;
- the domestic demand increases to about 79,000 tons by 1978 (assumes an income elasticity of demand of 1).

Independent projections by FAO of world production and demand for 1980 show a close balance. Assuming constant prices and policies they project both demand and production to be 6.4 million tons indicating a continuation of the present overall price level. Although the market for tobacco is quite heterogeneous and prices of individual tobaccos vary widely, in the absence of more information, the price of Indonesian tobacco is also assumed to be constant over the period. The value of Indonesian tobacco exports therefore will follow the same trend as production, and is projected to reach \$27 million by 1978 representing an average annual growth of about 4.7 per cent.

Coffee

13. Exports of coffee in 1971 were about 73 thousand metric tons; earnings were \$54.9 million. Of this almost 90 per cent was Robusta coffee and the rest mainly Arabica. As with most coffee-producing countries, Indonesia's future supply capacity is substantially larger than expected demand. The IBRD Agriculture Sector Survey reports that Indonesia has the capacity to more than double present exports of coffee by 1980. However, world exports are growing at barely 2 per cent per annum with the demand for Robusta rising at a sharper rate for Arabica. The IBRD is currently assuming that the demand for Robusta will grow at 2.5 per cent p.a. Therefore, Indonesia's coffee quota (Robusta) which is set at 73,860 mt for 1971/72 is likely to increase only to about 87,500 MT by 1978. The two major non-quota coffee markets are Japan and the USSR: Japanese demand has been growing at nearly 10 per cent per annum although a slowdown is forecast for the 1970's. With a concerted effort to raise sales in these markets, Indonesia might increase its exports of Arabica by 5 per cent per annum.

14. Coffee prices are projected on the assumption that the International Coffee Agreement due to expire in 1973 will be renewed. ^{1/} A recent crop failure (July 72) in Brazil has improved price expectations considerably. The initial expectations are that the prices would increase by about 15 per cent over previous forecasts. As a result, coffee earnings should increase considerably in 1972 and 1973 and thereafter increase gradually, reaching \$81 million by 1978.

Tea

15. There are numerous estimates of production and export volume; an estimate of 1971 export volume of 37,500 MT is selected as the most consistent with reported price relationships and past production estimates. Export earnings in 1971 were \$27.4 million.

16. An IDA credit to rehabilitate two tea estates and Dutch aid to another are expected to increase their combined annual production by 9,000 tons by 1980. However, because all other production is expected to continue its decline, by 1980 there would be a net increase of only about 4,000 tons and that would probably go to domestic consumption, so that exports are not likely to change much from the current level.

17. The main effect on export earnings will come from the change in the general level of world prices, as well as from changes in Indonesian tea quality. Based on the first four months of 1972, world tea prices could increase by about 3.5 per cent in 1972. The IBRD Trade Policies and Export Projections Divisions price projections indicate that up to 1975 prices will

^{1/} Recent action by some coffee-producing nations has seriously jeopardized renewal of the Agreement. Coffee price projections should therefore be accepted only with caution.

fall slightly from the 1972 estimated level, and that from 1975 to 1980 they will rise at about 2.3 per cent p.a. This, together with the assumed quality improvement in the three estates under rehabilitation plus assumed quality deterioration of non-rehabilitation tea, result in negligible increases in the value of tea exports to 1975 but thereafter growth at about 5 per cent p.a. Estimated foreign exchange earnings of tea in 1978 would be about \$35 million.

Coconut products

18. Production of copra equivalent in 1971 is generally agreed to be about 1.3 million tons. Most reports are quite pessimistic about future production possibilities. The crop is dominated by smallholders and characterized by neglect. What little replanting that has taken place has been with unselected seed. More than a third of the trees are over 50 years old. A growth rate of total output in excess of 3 per cent p.a. is generally considered to be optimistic. The National Fertilizer Study projects no increase in acreage and an expansion of fertilizer area from 1 per cent to 5 per cent for the period 1974-1980.

19. Of all Indonesian exports, coconut products have the largest relative domestic consumption, and future exports of copra will have to compete with a large and growing domestic demand. At present almost 90 per cent of the domestic consumption of vegetable oil consists of coconut oil; the rest is palm oil. The income elasticity of demand for vegetable oil in Indonesia is estimated to be 1.25, and there is a preference for coconut oil over palm oil. The elasticity of demand for fresh coconuts is estimated to be .56. These elasticities together with an income growth of say 6.5 per cent imply a growth in domestic demand of 7.5 per cent for coconut oil and 4.5 per cent for fresh coconuts. These high growth rates together with the high proportion of domestic consumption of coconut products result in a rapid decline of copra exports. However, this decline should be forestalled somewhat because as the demand for coconut oil outpaces supply appropriate price signals should shift some of the domestically consumed fresh coconut supply into coconut oil. In addition, a tight market for coconut oil should result in an increasing domestic consumption of palm oil. Since domestic consumption of copra cake and other coconut residuals is projected at only 3 per cent, export availabilities of copra cake should grow substantially (over 51 per cent) to 1978.

20. These assumptions imply the following about coconut product exports. First, by 1975 copra should no longer be an export of any significant magnitude. In addition, copra prices are projected to decline by an average 2.25 per cent p.a. Second, due to the large domestic demand of coconut oil and the relatively small domestic demand for copra cake and other residuals, the export availabilities of copra cake should increase substantially over the period. However, it is questionable whether these increases can be successfully marketed since copra cake is a rather low protein, inferior oil cake. Given a rather poor market it might be difficult to increase copra cake exports by more than 5 per cent p.a. The copra cake price which since May 1972 has been abnormally low, should quickly regain its 1971 level beyond which no further increase is forecast. Foreign exchange earnings of copra cake could reach almost \$16 million by 1978.

Palm Products

21. Palm oil and palm kernels are produced almost wholly on estates. Four PNP's are being rehabilitated through IDA projects. Their combined output is forecast to more than double by 1978. Output of the other estates, together with smallholder production, including the small addition that the recently signed IDA smallholder project will make to output beginning in 1971, is estimated to increase by only 2 per cent p.a.

22. As noted in para. 19 above, the domestic consumption of vegetable oil is expected to increase by 7.5 per cent p.a. At present palm oil accounts for only about 10% of vegetable oil consumption, however as the demand for coconut oil outstrips production, growing amounts of palm oil will be consumed domestically. The effect of these production and consumption forecasts would result in exports of about 367 thousand tons of palm oil and 87 thousand tons of palm kernels by 1978.

23. World production of palm oil during the decade is expected to increase by 9.3 per cent per annum. For the market to absorb this increased level of world palm oil exports, it is essential that palm oil's share in total usage of oils and fats increases substantially. This can only be achieved by palm oil being relatively cheaper than other oils and fats and by exporting countries providing a steady supply of quality oil. It has been estimated by the IBRD Trade Policies and Export Projections Division that the palm oil price will experience a much greater than average decline when compared with most other vegetable oils, and settle around E68 per long ton (c.i.f. Europe) in 1975 through 1980 compared with E110 in 1970. Palm kernel prices are assumed to be in line with other fats and oils over the long term. A price of E50-55 per long ton (c.i.f. Europe) by 1980 seems likely for palm kernels. The 1972 January average price was E50 because it has dropped sharply from the unprecedented high 1970 average level of E71 under the pressure of the steep decline in the copra price. Although Indonesia production will grow substantially over the period, as a result of falling palm oil prices, export earnings from palm products are projected to increase by less than 1 per cent p.a. to 1978.

Pepper

24. Pepper exports increased substantially in 1971 as production recovered from the disease which virtually destroyed the 1970 pepper crop. Besides disease, which periodically hits the pepper crop, overall productivity is low because of a general lack of maintenance, fertilizer, and credit. Demand is income inelastic and therefore is expected to grow only at about the rate of population growth. Improvements in fertilizer use, as projected by the National Fertilizer Study, as well as efforts to improve marketing via the Indonesian Pepper Marketing Board, should result in production being able to match this projected demand. Assuming a continuation of the 1971 price, production and foreign exchange earnings are projected to grow at 2 per cent p.a.

III. TIMBER

25. In recent years, forest products have emerged as one of Indonesia's most important commodity groups. According to Government sources timber exports amounted to US\$6.2 million in 1967 (less than 1 per cent of total exports) and subsequently increased very rapidly to some US\$168 million in 1971. They accounted for 30 per cent of the growth of total exports over the period representing 13 per cent of exports in 1971 (excluding oil they accounted for 65% of growth over period).

26. Recorded exports from Indonesia are normally valued at "check prices" which are floor prices determined by the Department of Trade for the purpose of assessing the export prices. In the past, check prices were determined at levels far below estimated actual fob prices. Since 1969 Indonesia has been raising check prices very substantially every year and this combined with a sharp volume increase has contributed to the dramatic growth in the earnings of exports from timber.

27. The world demand for tropical hardwood is projected to grow at 5.1 per cent p.a. for the period 1968-75 and 3.6 per cent for the period 1975-80. The US and Japan, however, as a result of higher than average growth rates in demand by 1980, are expected to account for about three-quarters of all consumption outside the tropical region. This implies that demand prospects for tropical hardwood produced in the tropical Asia-Pacific region are specially favorable because of the latter's proximity to markets in Japan and the US. There also seem to be good prospects for the developed importing countries to acquire an increasing proportion of their tropical hardwood imports in various processed forms.

28. Outlook for Indonesia's export earnings from forecast production is bright. Annual earnings could increase from US\$178 million in 1971 to over \$500 million by 1978.

29. Logs will continue to dominate the export value of forecast products during the coming few years. This is not only because the volume of log exports is expected to rise at high rates, but also because it is assumed check prices will be raised; 1971 timber check prices are estimated to average about 72 per cent of actual fob price. The projections assume that by 1973 check prices will be only slightly below probable fob market prices. Earnings from sawn wood (other than teak) are projected to increase from the current level of US\$3 million to US\$24 million in 1975 and to US\$100 million in 1980. Earnings from veneer exports are assumed to become significant in 1974 and earnings from plywood exports from 1975. The veneer and plywood exports are projected to earn some US\$100 million a year by 1980.

30. The projected rapid progress in the earnings from exports of processed wood assumes that the Government takes the necessary steps immediately to encourage timber companies operating large logging concessions to establish export-oriented processing facilities. Steps to be taken should include not only measures to slow down the expansion of log exports but also positive measures to encourage the establishment of processing facilities.

31. Export earnings by the teak sector are expected to increase from the current level of US\$3 million to over \$10 million by 1975, assuming the development program in Central and East Java will be implemented.

32. Earnings from pulpwood are minor and are not expected to build up to a scale greater than US\$1 million a year. Besides wood and wood products, Indonesia has been exporting miscellaneous non-wood forestry products. These include rattan, "tenghawong" (an oil used in lipstick production), resin, gum and a few other minor items. The first two are more important and have generally good prospects. Earnings from the other items have tended to decline and are expected to do so in the future.

IV. MINERALS (non-oil)

33. Non-oil mineral exports continue to be dominated by tin, which in 1971 accounted for over 75 per cent of the \$78 million of exports. By 1978 tin's share is projected to fall to about 40 per cent as a result of large increases in the exports of nickel and copper. These latter two commodities will account for over \$100 million of foreign exchange earnings by 1978 and will make mining one of Indonesia's more dynamic export sectors during the decade.

Tin

34. Export earnings from tin were \$60.0 million in 1971 about double those of 1967. At present all tin mining is done by the state enterprise, P.N. Timah, and in 1971 it produced 19,765 metric tons. This year's output will easily exceed the First Repelita target of 20,000 MT set for 1974. Three foreign firms, P.T. Koba Tin, N.V. Billiton and P.T. Broken Hill, have signed Contracts of Work over the past few years, and are still at the exploratory stages. There are no indications to date as to their possible sizes or dates of operations. P.N. Timah is conducting substantial off-shore explorations as well as continuing its program to rehabilitate its dredgers. There are plans, if financing can be found, to buy additional dredgers as well as to build a new smelting plant. Present smelting capacity is about 13,000 MT. The proposed new one is designed to bring total capacity to about 25,000 MT.

35. P.N. Timah has a longer term goal of increasing production by 10 per cent p.a. While this is in the realm of possibility on the supply side, achieving such an output would be complicated by the low growth forecast for world tin demand. Indonesia as a member of the International Tin Council is subject to export quotas, and given the demand forecasts, it seems unlikely that quotas would grow at 10 per cent. A target more in line with anticipated restrictions on the demand side is one mentioned by Bappenas of 25-30,000 MT mined and smelted in Indonesia by 1980. An estimated output of 25,000 tons together with the rather low increase forecast for the price of tin, result in projected export earnings from tin reaching \$79 million by 1978; an average growth of about 4 per cent p.a.

Bauxite

36. As a result of recently improved harbor facilities and better efficiency in ore handling, annual exports of bauxite rose from about 800 thousand tons in 1969 to 1.2 million in 1970 and 1971. The bulk of the exports go to Japan under a 10 year (1968-78) sales contract averaging about 1 million tons per year. While high grade ore reserves have been decreasing rapidly, a recent survey indicated the existence of abundant (78.5 million tons) low grade deposits.

37. The future of bauxite exports depends on how much Japanese smelters can continue to absorb in light of the competition they encounter with other aluminum suppliers. The Indonesians are seriously considering the construction of an alumina plant. No plans have been finalized yet but the Japanese are interested in participation since it would reduce their transport and aluminum smelting costs considerably, and thereby improve their competitive position. There are also plans for a large joint power/aluminum-smelting project. It is now at the bidding stage and even if finalized quickly is unlikely to be operative by 1978. The only other company active in aluminum mining is Alcoa, which has made discoveries in West Kalimantan, and is continuing work to assess their extent and the most economical way to mine them. To date no production plans have been announced nor markets secured for additional production of bauxite. Exports are projected at the current level of 1.2 million pounds per year.

Copper

38. Freeport Indonesia has estimated the "Ertsberg" copper reserve in West Irian to be about 32.6 million tons averaging 2.5 per cent copper. Production is scheduled to begin in early 1973 at a rate of 225,000 tons annually destined for Japan and Germany. The value of copper concentrate exports could reach US\$60 million annually.

Iron Sands

39. Production of iron ore containing 55-58 per cent iron and about 7-8 per cent titanium started in May 1971. P.N. Aneka Tambang has a contract with Japan for 300,000 tons of iron ore a year for a next ten years at a price of \$5.50 f.o.b. There is an estimated three million tons of ore. A larger deposit near Jogjakarta is under consideration for development. Preliminary exploration shows a deposit possibly containing more than 140 million tons of exportable iron sands. Harbor conditions are, however, very poor.

Nickel

40. Indonesia is the main producer of nickel ore in South-east Asia and sells all of its output to Japan. At present only the state enterprise, P.N. Aneka Tambang, is mining nickel and in 1970 exported 538 thousand tons of ore worth \$8.3 million. The reported earnings for 1971 are \$9.7 million and based on an estimated price of about 30¢/lb. and a nickel content of

2.4 per cent, export volume would have been about 600 thousand tons. Faced with the prospects of depleted reserves of exportable grade nickel ore at the end of the contract, a low-grade-nickel processing plant is scheduled to begin production in 1974. Initial production is set at about 4,000 tons per annum of nickel in ferronickel for export to Japan as part of a long-term sales contract. Low-grade ore reserves for this plant are estimated to be capable of supplying the plant for at least thirty years.

41. In addition to P.T. Aneka Tambang's operations, contracts of work have been signed with three foreign firms, two of which should start substantial production by the mid-seventies. P.T. International Nickel Indonesia (INCO) announced in June of 1971 that it had located significant lateritic nickel deposits and was making plans to develop them. The first stage of the project would involve the construction of facilities to produce about 50 million pounds of nickel per year in the form of matte with initial production plans for the mid-seventies. P.T. Pacific Nickel announced in October 1971 that it had also located significant lateritic nickel deposits and that it would proceed to the next stage of development. Provided the feasibility study of plant design now underway indicates the deposits are economically exploitable and marketing and financing can be arranged, initial production could begin as early as the mid-seventies. The project would involve the production of 60-100 million pounds of nickel annually, primarily in metallic form. A third firm, Indonesian Nickel Development, is still at the exploratory stage.

42. The world nickel market went through a severe slump in 1971. However, demand has already picked up, particularly in the US and is likely to improve further with economic recovery in the industrial countries. There are, nevertheless, a number of imponderables in the market situation which invite caution in viewing nickel's long term prospects. But even under pessimistic assumptions, world nickel consumption is forecast by the IBRD, to grow at a respectable rate: 4.0 per cent per annum between 1970 and 1975 (5.5 per cent annually by 1972-75) and 4.8 per cent between 1975-1980. On the other hand, producers' stocks are large as a result of the 1971 slump and might not be liquidated rapidly. Even conservative estimates of probable capacity indicate that nickel production potential may exceed requirements for another two years, and possibly three or four. This short-run oversupply should not cause problems for Indonesia's nickel exports since the large production increases forecast for INCO and Pacific nickel will only begin in the mid-seventies.

43. In the absence of price and ore content information future exports of nickel ore are projected at the current Indonesian f.o.b. nickel price of about 30 £ a pound. Exports of nickel contained in ferronickel are tentatively set at \$1 a pound. At these prices exports of nickel would reach \$47 million by 1978, almost 500 per cent higher than the 1971 level. However, if the ore content of INCO's and Pacific's reserves differs from the present ore or some partial smelting is undertaken in Indonesia, the value of these projections would be substantially changed.

VI. ALL OTHER GOODS

44. All other goods (excluding traditional agricultural exports described above, and timber and minerals) taken together have made significant gains over the last few years. In 1970 exports of these goods were equal to \$59.9 million, in 1971 they had increased by 47 per cent to \$87.1 million. Over 90 per cent of this increase was due to increases in exports of fish, maize and cassava. Exports of these three products were \$16 million in 1970 and \$41 million by 1971; they should continue to be substantial growth exports.

Fish and Fish Products

45. The spectacular increase in fish exports (based on E3 ^{1/} forms, edible fish increased from \$5 million in 1970 to \$17 million in 1971) is almost wholly attributable to increased shrimp exports to Japan. The prospects for a continuing strong demand from Japan are excellent. Shrimp resource surveys conducted by the Directorate of Fisheries indicate that substantial stocks of shrimp and fish exist off the east coast of Sumatra as well as in the areas of known high potential that are presently being exploited.

46. Another fish that is expected to be exported in the near future in substantial quantities is the skipjack tuna. Exports will go to Japan where the market is good and prices have been rising. IDA in 1970 signed a development credit to develop the export of skipjack. Although this project is behind schedule, skipjack exports should reach about 1,000 tons by 1973 and increase to 9,600 tons by 1978. At full development, based on a Japanese price (c.i.f.) of \$500 a ton, this would add about \$2.8 million to export earnings. Nine joint ventures in fisheries are underway, mainly with the Japanese. Actual investment is estimated at \$9.4 million. Another 5 companies are planning to establish joint ventures based on skipjack pole fishing. The Indonesian Government has recently signed agreements with ADB, UNDP/FAO and Japan for fisheries projects. These investments, both public and private, which for the most part are aimed at increasing fish production for domestic consumption, should result in a significant increase in export earnings as well. Projects suggested by the IBRD Agricultural Sector Survey would add \$20 million in shrimp exports and about \$15 million in skipjack. Given the large potential for production, the large and growing demand, and the substantial interest and investment in this sector, Indonesia should have no difficulty in exporting about \$50 million worth of fish by 1978, three times present earnings.

^{1/} E3 forms are authorizations given by foreign exchange banks to exporters of commodities other than oil and tin to receive payment in foreign currencies.

Cassava

47. About 400 thousand tons of cassava (\$13 million) were exported to Europe in 1971 as feed grain. The bulk of exports to date has been in the form of cassava chips but to meet market demand for a more uniform feed, efforts are being made to switch over entirely to cassava pellets. Eight pelletizing factories are now in operation, four are under construction and six more have been granted operating licenses. Licenses are granted only if arrangements are made to guarantee an adequate supply of cassava to keep the factory in operation. Total pelletizing capacity when all these factories are in operation is about 540,000 tons. The growth in demand for feed grains is estimated at 4-6 per cent. Substantial amounts of Indonesia's cassava go to the West German pig industry which could grow even faster. In addition, the Indonesian Government is attempting to negotiate a reduction of the EEC import tariff on cassava. Since production for the pelletizing factories has been arranged and since the factories should be in operation by 1975; exports are estimated to reach about 500,000 tons by 1975, increasing by 5 per cent p.a. thereafter. At current prices of cassava pellets, this could mean cassava exports of about US\$23 million in 1978.

Maize

48. Maize exports in 1971 are reported at 225 thousand tons (\$11.2 million). Corn is the second largest user of land in Indonesia but its value in total production ranks below rubber and cassava. Corn area and production have declined in the face of intensive programs for rice. Corn is concentrated in East Java and Lampung and experiences in North Sumatra have demonstrated that with better seeds, fertilizer and improved credit and marketing opportunities farmers can raise production substantially.

49. Japan and smaller markets in Asia have shown an interest in importing corn from Indonesia, but internal market costs and port and ocean freight charges make Indonesia's corn more expensive than that of other suppliers. For instance, the cost of shipping a ton of corn from Indonesia to Japan is \$10-11 which is almost double the cost from Thailand to Japan. The opportunities for corn as an export crop are considered good if yields can be raised and marketing costs reduced. There is some indication that the Government is making a serious effort through its Bimas Pulses program to raise output. The Agriculture Sector Survey estimates that 500,000 tons could be exported by 1975 and 1 to 2 million tons are possible by 1980 with an intensive corn program. This latter figure is rather high if competition with Thailand for the Japanese market is considered. Exports are projected to reach 1.0 million tons by 1978 equivalent to US\$50 million.

Other Agricultural Products

50. Export prospects for peanuts and soya beans, both of which are included under the Bimas Pulses Program, are good. A sizeable yield increase in both crops is possible and Indonesia could expand its exports significantly to take advantage of the large world demand. Exports of peanuts could reach 65 thousand tons by 1978 - a tripling of present exports.

Soya bean exports could increase dramatically to about 150,000 tons by 1978 from their present low level of 3,000 tons. Substantial planting of cashews has taken place recently under new official programs - exports could begin in a few years.

Manufactured Goods

51. Manufactured exports, excluding processed raw materials such as plywood and technically specified rubber, are at present negligible. Based on E3 forms, 1971 exports of manufactured goods are estimated at about \$1.4 million and consist mainly of textiles, clothing, and matting. A reportedly exportable grade of silk has been developed in South Sulawesi as a result of a Ministry of Trade project assisted by ILO. Future manufactured exports could be increased considerably by the development of a bonded warehouse - free trade port system (see Industry annex) that would provide incentives to small and medium scale manufacture to begin exporting in addition to producing for the local market. To account for this possible development manufactured exports are roughly projected to grow by 30 per cent per annum to 1976 and subsequently by 50 per cent per annum; reaching \$12 million by 1978. The potential for increasing manufactured exports is much larger and would depend on the success of Government efforts to stimulate manufacturing based on Indonesian raw materials and to promote the development of export industries using effectively the low-cost labor available.