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**Report No. P-1825-BR**

REPORT AND RECOMMENDATION  
OF THE  
PRESIDENT OF THE  
INTERNATIONAL BANK FOR RECONSTRUCTION AND DEVELOPMENT  
TO THE  
EXECUTIVE DIRECTORS  
ON A  
PROPOSED LOAN  
PETROBRAS FERTILIZANTES, S.A.  
WITH THE GUARANTEE  
OF THE  
FEDERATIVE REPUBLIC OF BRAZIL  
FOR A  
FERTILIZER PROJECT

April 27, 1976

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CURRENCY EQUIVALENTS

(As of April 13, 1976)

Currency Unit	=	Cruzeiro (Cr\$)
US\$1	=	Cr\$10.27
Cr\$1	=	US\$0.10
Cr\$1,000	=	US\$97.37
Cr\$1,000,000	=	US\$97,371

INTERNATIONAL BANK FOR RECONSTRUCTION AND DEVELOPMENT

REPORT AND RECOMMENDATION OF THE  
PRESIDENT TO THE EXECUTIVE DIRECTORS ON  
A PROPOSED LOAN TO PETROBRAS FERTILIZANTES, S.A.  
WITH THE GUARANTEE OF  
THE FEDERATIVE REPUBLIC OF BRAZIL FOR A FERTILIZER PROJECT

1. I submit the following report and recommendation on a proposed loan to Petrobras Fertilizantes, S.A. (BRASFERTIL) with the guarantee of the Federative Republic of Brazil for the equivalent of US\$50 million to help finance a fertilizer project. The loan would have a term of 15 years, including four and a half years of grace, with interest at 8-1/2% per annum. The Government of Brazil would charge BRASFERTIL a guarantee fee of 1-1/2% per annum on the outstanding amount of the Bank loan, bringing the cost of the loan to BRASFERTIL to 10% per annum.

PART I - THE ECONOMY 1/

2. A report, entitled "Economic Memorandum on Brazil" (812-BR), dated July 7, 1975, was distributed to the Executive Directors on July 21, 1975. Country data sheets are attached as Annex I.

3. During 1967-74 the combination of excellent domestic economic management and buoyant world economic environment produced a period of high and sustained income growth, strong balance-of-payments performance and gradually decelerating inflation. Brazil's average annual rate of growth of about 10% over this period resulted in a 60% increase in per capita income, a 130% increase in manufacturing output and a 380% increase in the US dollar value of exports. However, international economic events in 1974 and 1975 have forced at least a temporary slowdown in the pace of economic growth. With the sharp deterioration of the country's terms of trade and the disruption of the world capital market, the balance-of-payments is proving to be a severe constraint on Brazil's growth. As a result, the pace of growth has dropped sharply, into the 4-5% range during 1975-76.

4. The fourfold increase in the price of crude oil (adding some US\$2 billion to the import bill), the steep rise in the price of most imported raw materials, as well as the hardening of terms of external financial credits, made management of the external sector difficult in 1974-75. These factors caught Brazil at the time when its economy was overheated and growth of import demand was very high, because after a prolonged period of rapid growth some key industrial sectors were approaching capacity levels of output. The current account deficit, which averaged just US\$1 billion in 1969-73, or 2% of GDP, widened to about US\$7 billion or 7% of GDP in 1974, reflecting the sizeable differential between import growth (about 100%) and export growth (roughly 30%) and the increasing level of interest payments on debt. The bulk of the deficit was financed by a large increase in the inflow of external

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1/ This section is reprinted from the President's Report on the Agricultural Research Project for Brazil (Report No. P-1813-BR), dated April 13, 1976.

financial credits of considerably shorter maturity than was generally available during 1971-73.

5. The Government attempted to narrow the balance-of-payments current account deficit in 1975. It was successful in keeping imports somewhat below the level in 1974 in nominal terms by maintaining a balanced budget, continuing the crawling peg exchange rate policy and by introducing direct import controls. This implied a substantial reduction in the real level of imports and was accompanied by a decline in the rate of GDP growth to 4%. Export growth of about 9% was somewhat disappointing, largely due to the frost in southern Brazil in July 1975, which adversely affected production of some key crops, including coffee and sugar, and a slowdown in manufactured export growth as a consequence of the recession in the consuming countries. Nevertheless, because of import restraint the trade deficit declined from US\$4.7 billion in 1974 to US\$3.5 billion in 1975. However, improvement in the trade account was virtually offset by a large increase in interest payments reflecting the growth of the external debt and higher Eurodollar interest rates.

6. The Government monitored the balance-of-payments situation very closely and in the second half of 1975 adopted several new measures designed to produce a further contraction of imports in 1976. The new measures established advance import deposit requirements on approximately 40% of merchandise imports, further increased import duties, increased gasoline prices 25% and continued restriction of public sector imports. In addition, as a longer term measure, the Government has given the state petroleum monopoly, PETROBRAS, permission to undertake service contracts with foreign oil companies. It is clear, however, that despite these measures 1976 will be another difficult year for balance-of-payments management as prospects are for a relatively small gain in exports and as a result economic growth can again be expected to be in the 4% range.

7. Adverse developments during 1975-76 reflect the fact that in recent years, Brazil has become more closely integrated into the world economy and its growth has become more dependent upon and vulnerable to changes in the world economic situation. The slowdown in the rate of growth of the world economy has, with some lag, had an adverse impact on prices of Brazil's primary exports and on the rate of growth of its exports of manufactures, and, through the balance-of-payments, on the overall growth of the economy. It now appears that world economic conditions will not permit Brazil to grow during 1975-80 at the 10% pace attained in the preceding years. However, despite the reduced pace of growth in 1975-76 a growth path averaging 6% per annum is still feasible for 1975-80 as a whole. It is estimated that to attain such a growth path, the average annual net inflow of medium- and long-term capital (that is, capital other than direct investments and financial credits) required for the 1975-80 period will be substantial, about US\$1.8 billion, or three times the average for the 1970-74 period.

8. At the end of 1975, Brazil's public external debt reached about US\$11 billion. The public debt service ratio for 1975 is estimated at around 16.7%, which is in line with that of other countries at a similar stage of development. Brazil's total (public and private) external debt reached about US\$22 billion at the end of 1975, of which about two-thirds, or US\$15 billion was in the form of financial credits. The debt service ratio during

1975 on this total external debt was about 38%, or about the same as the average for 1969-73. However, it should be noted that net foreign exchange reserves at the end of 1975 were still large, about US\$4.6 billion, equivalent to some four months of the 1975 imports of goods and non-factor services. While total debt service ratio can be expected to rise somewhat in 1976, if an export growth rate of around 17% per year in dollar terms (compared to 30% in 1970-74) can be maintained over the 1975-80 period and if average maturities of new financial credits gradually improve from six to eight years, the debt service ratio in 1980 can be expected to return to the level prevailing in the 1969-73 period. Despite Brazil's heavy debt service burden, the large foreign exchange reserves accumulated over the past several years ensure that the country will have the liquidity to meet its debt service obligations in the short term, while the country's record of high caliber financial management provides grounds for confidence in the maintenance of creditworthiness over the longer run.

9. Despite its recent growth and vast potential, Brazil is still a country with a very unequal distribution of income and extensive absolute poverty. The present Government acknowledges the gravity of the country's income distribution problem and accepts the responsibility for its alleviation. While like the previous Government it believes that a high rate of growth is necessary to increase the income of the poor, it does not believe that the "trickle down" effects of rapid growth are enough and is shaping a new positive policy which could be labeled as "redistribution along with growth." To this end, in addition to pursuing some of the social programs initiated by its predecessor, the Government is also working on new measures for improving income distribution. These can be classified into three broad areas: (a) regional development; (b) provision of social services; and (c) wage policy. In addition, recent tax changes have tended to have a favorable, although marginal, impact on income distribution.

10. As one of its measures to promote development in poorer regions, the Government has formulated a program known as POLONORDESTE for rural development in the Northeast. This program envisages investment expenditures of about US\$2.5 billion during 1975-79, and is designed to raise the productivity and incomes of small farmers through, inter alia, formulation and execution of integrated rural development projects, which are likely in some cases to include changes in land tenure. POLONORDESTE is based on the assumption that the rural Northeast cannot be regarded as a homogeneous whole and, therefore, standardized programs are inadequate. The Government identified 28 subregions covering large portions of the Northeast on which POLONORDESTE funds would be used initially. The recently approved Rio Grande do Norte project is one of the first under POLONORDESTE, and the Government intends to present additional similar projects for Bank consideration in the future. Active consideration is being given to a major modification in the state value added tax system to redistribute fiscal resources from the richer to the poorer states, in order to give the latter the fiscal resources which they badly need to accelerate social programs, particularly in education. In the area of social services, the Government has created a new Ministry of Social Security in order to consolidate its social benefit programs and to

extend these programs to a larger share of the population. In 1975 it allowed under the Social Integration Program (PIS, a social security fund), the lowest paid workers covered by PIS, with incomes previously between about US\$60 and US\$300 monthly, to withdraw up to one month's minimum wage (about US\$60) from their PIS accounts. The Government is also strengthening the nutrition program which, under the previous Government, got off to a poor start. Greater emphasis is being given by BNH (the National Housing Bank) to low-income housing, whose beneficiaries will enjoy better financial terms than in the past. BNH is also developing a site and services program to reach parts of the population even lower down the income scale. In agriculture, the recently reorganized rural extension agency (EMBRATER) will expand and strengthen its activities directed specifically toward the small-scale farmer; and the new federal agriculture research institutions (EMBRAPA) is defining its program to include a selection of crops and farming-systems which will ensure that small-scale farms benefit from research efforts. Overall, the Government's recently approved public investment program for 1975-77 gives high priority to education, health, agriculture and regional development, which account for about 30% of total public investment. Finally, the Government intends to use a wage policy to improve income distribution. It has already revised the formula governing the adjustment of the union wage scale and has introduced an 8-10% increase in the real minimum wage.

## PART II - BANK OPERATIONS IN BRAZIL

### Bank Operations

11. By March 31, 1976, the Bank had approved 60 loans for Brazil, amounting to US\$2,563.2 million, of which 36 had not been fully disbursed. During FY65-69, disbursements averaged only US\$10 million per year, increasing to an average of US\$136 million per year during FY70-74, reaching US\$225 million in FY74, US\$248 million in FY75, and US\$127 million in the first half of FY76. Disbursements will continue to increase during the next few years. Annex II contains a summary statement of Bank loans as of March 31, 1976 and notes on the execution of ongoing projects.

12. Bank lending to Brazil was very active in FY72, when seven loans were approved totalling US\$437 million, including three loans totalling US\$192 million for the Stage II expansion of the steel industry. In FY73, six loans amounting to US\$187.7 million; in FY74, three loans totalling US\$242 million; and in FY75, five loans totalling US\$426.5 million were approved. So far in FY76, six loans totalling US\$327 million have been approved: US\$60 million for the COSIPA Stage III steel expansion program; US\$75 million for the FEPASA railway rehabilitation and expansion program; US\$12 million for the Rio Grande do Norte rural development project; US\$55 million for the secondary and feeder roads project; US\$85 million for the development banking project; and US\$40 million for the agricultural research project. We are working actively with the Brazilians on the preparation of a nutrition project, a second agro-

industries project, a second ammonia/urea fertilizer project, electric power transmission and distribution projects in the Northeast and in the State of Parana, a water and sewerage project in the state of Minas Gerais, and a rural development project in the same state.

13. Of Brazil's external public debt outstanding and disbursed at the end of 1975, amounting to US\$11 billion, the Bank held about 10%. The Bank's share of the service on this debt was about 4.5%. If present trends continue as expected, the Bank's share in external public debt outstanding would increase to 12% by 1980. The Bank's share of public debt service would rise to about 6% while its share of Brazil's total (public and private) external debt service would remain at the present level of 2.7%.

#### IFC Operations

14. IFC has committed more financial resources to Brazil than to any other country. As of March 31, 1976 IFC had made 27 commitments to Brazil, totalling US\$262.9 million, of which US\$32.6 million has been cancelled, US\$20.4 million repaid and US\$126.9 million sold. Of the balance of US\$83.0 million, US\$60.6 million represents loans and US\$22.4 million equity. A summary of IFC's investments up to March 31, 1976 is given in Annex II.

#### Lending Strategy

15. In its lending to Brazil, the Bank has sought to help the Government achieve a number of important development objectives, which are interdependent and complementary. One important lending objective for the Bank has been to help Brazil ease the foreign exchange constraint on its development, a constraint that has become more critical since the increase in petroleum prices, by supporting projects designed to increase Brazil's export capacity and, where economical, to substitute domestic production for imports. The proposed fertilizer project will help alleviate the balance-of-payments constraint in two ways: first by substituting local production of fertilizer for imports (at present Brazil imports about 70% of its fertilizer consumption), and second, by contributing, through increased agricultural production, to the success of the Government's program to promote non-traditional agricultural exports. The balance of payments would also be aided by the proposed agro-industries program now under preparation, which is oriented toward exports to supply major quantities of foodstuffs to the rest of the world. Much of the investment which the Bank has helped finance in Brazil's transport sector--railways, ports and highways--is designed to facilitate the smooth and economical flow of exports. Also, support of the steel expansion program is helping Brazil develop output of a commodity which can be produced efficiently in Brazil owing to the country's bountiful supply of high grade iron ore and the scale of its internal markets.

16. Another of the Bank's lending objectives in Brazil has been to support the growing effort of the Government to identify and develop projects designed to increase productivity and incomes of the lowest income segments of the population, to broaden the economic opportunities open to those

groups, and to alleviate poverty. The Government's fertilizer program, of which the proposed project is a part, should lead to lower cost to the economy of fertilizer consumption and greater stability of fertilizer supply, thereby stimulating increases in agricultural production. A more intensive use of land through fertilizer use is one of the strategies of the Government to improve the incomes of small farmers, as they normally do not have the means to expand their area under cultivation. The proposed project would closely complement the Government's efforts undertaken in the recently approved agricultural research project, whose emphasis is on improving the technology available for selected crops that are important to the small farmer. Other Bank projects designed to assist low-income groups are the recently approved Lower Sao Francisco and Rio Grande do Norte rural development projects, which will help develop the range of rural services necessary to ensure that improved technology is made available to small farmers. The Government is now preparing, in some cases with the collaboration of Bank staff, additional integrated rural development projects to increase the productivity of the small farmer and we expect to present in the future an increasing number of projects of this type. The Bank is also participating in important development efforts in Brazil's urban areas, and a recently approved development banking project, by focusing on small and medium industries, will give special support to a segment of the industrial sector that has significant labor absorption prospects and should result in the creation of a sizeable number of new jobs in many urban areas in the country. We are also actively associated with the preparation of new projects in the fields of water supply and sewerage, site and services, nutrition, and rural education.

17. A third Bank lending objective in Brazil is to support institutional development and policy reform, in order, inter alia, to help maximize public savings and ensure that they are used economically. Institutional improvement is an important objective of this proposed project, as, in connection with it, the Government will undertake a marketing and distribution study to define improvements in the marketing and distribution system and changes in Government policy needed to support the increases in fertilizer consumption foreseen in agricultural and rural development programs. The institution-building objective has also been important in the agricultural research project, which will strengthen the production orientation of Brazil's agricultural research efforts in the Northeast, North and Center-West of the country. The institution-building objective has also been important in our assistance in the transportation sector, where emphasis has been given to the rational selection of investments, the strengthening of railway operations and the improvement of their financial performance, and in the electric power sector.

18. A final objective which applies to all Bank lending to Brazil is to provide part of the very large volume of medium- and long-term capital inflows that Brazil has needed and will continue for some years to need in order to sustain rapid growth and achieve its employment creation and regional development objectives. In connection with the project, the Government has decided to attempt to tap the US long-term institutional investors' market,

which has not been exploited adequately by Brazil in the past. The Government has expressed interest in receiving the Bank's support for this venture in the form of a co-financing operation similar to the one recently concluded for Companhia Siderurgica Nacional (CSN). In some sectors, such as electric power and steel, the Bank's participation has helped Brazil obtain additional bilateral supplier and financial credits in greater amounts and on more favorable terms.

### PART III - INDUSTRY, AGRICULTURE, AND THE FERTILIZER SUBSECTOR IN BRAZIL

#### Industry and Agriculture

19. Industry has played a central role in the rapid growth of the Brazilian economy in the last few years. During 1967 to 1974 real industrial output increased at an average annual rate of 12.2%. Industrial growth decreased to 4% in 1975 as a result of balance-of-payment constraints and is expected to be in the range of 5% to 6% in 1976. The most dynamic element of Brazil's industrial expansion has been the production of consumer durables and capital goods, which increased at an annual average rate of 18% during 1967 to 1974, and now accounts for about 28% of total manufacturing production. On the other hand, the slowest growing subsector has been the traditional consumer goods industries (textiles, clothing, food products) whose share in manufacturing output declined from 36% in 1967 to 28% in 1974. Production of intermediate goods (chemicals, fertilizers, paper, rubber, semi-finished metals), which account for 42% of manufacturing output, has increased at a good pace, averaging 12% since 1967. Increased production of these intermediate goods, however, has not been sufficient to cope with growth in domestic demand, and imports are still significant, reaching US\$4.1 billion in 1975 (excluding petroleum) or 34% of total imports. There is, therefore, substantial opportunity for import substitution in this subsector of industry. The proposed project is part of the Government's program to achieve self-sufficiency in fertilizers in the next 5 to 10 years.

20. While the rapid expansion of the Brazilian economy during 1967-74 was spearheaded by accelerated industrial production, the agricultural sector also performed well, providing an increasing share of Brazil's growing domestic requirements for food and fibers as well as a rising export volume. Agricultural output grew at a rate of about 6% per annum during 1967-74, and at 3.4% in 1975, despite adverse climatic conditions in four out of seven years. Part of this growth was due to substantial increases in the production of new crops, such as soybeans and wheat in the Center Region of Brazil. At present Brazil has become the world's largest producer of sugar, and it is the second largest supplier of soybeans, while remaining the world's leading coffee producer. While the sector's contribution to gross domestic product has declined from about 20% in 1967 to about 15% at present, it still accounts for over 60% of the value of exports. Three commodities--coffee, soybeans and sugar--generate 40% of total export earnings. While coffee continues to play an important role in the sector, accounting for about 12% of output, its share in total exports has declined from 44% in 1967 to about 11% in 1975.

21. In the past, Brazil's increasing agricultural output has resulted mainly from expansions of the cultivated area. From now on, however, agricultural growth will have to depend to an increasing extent on raising the productivity of presently cultivated areas. The Government has established a goal of 40% (7% annually) of real increase in agricultural output for the 1975-79 period, with the aim of making Brazil one of the world's foremost producers and exporters of foodstuffs. The Government's strategy to achieve this objective has two components. First, it has allocated substantial public resources to incorporate additional new areas to agricultural production through programs such as PIN (the National Integration Program) and the new POLAMAZONIA and POLOCENTRO programs which provide agricultural credit and financing of transport and rural infrastructure and the like in the North and Center-West, respectively. The goal of these programs is to expand agricultural area by 4% to 5% annually and to encourage settlement to bring these areas into production as quickly as possible. A second component of the Government strategy is to increase productivity through modernization of agriculture and increased use of fertilizers and improved seeds. A substantial expansion in the supply of credit and complementary technical assistance for the purchase of modern agricultural inputs is included in the Government program. These inputs should bring about a 2% to 3% annual increase in productivity necessary to achieve the overall growth target of 7% for the agriculture sector. The proposed fertilizer project is an important component of the Government's program to achieve these increases in agricultural productivity.

22. Increased agricultural productivity is particularly important to improve the income of small farmers as they are normally unable to increase their income by expanding their areas under cultivation. To this effect, the Government has introduced special regional programs such as POLONORDESTE, which is designed to improve small farmers' productivity in the Northeast through the formulation and execution of integrated rural development projects. It has also reorganized federal research and extension services to serve a broader segment of the rural population. In addition, it recently introduced a crop/credit insurance scheme to insure farmers against a large portion of losses resulting from natural disasters.

23. The overall package of new programs reflects a shift in agricultural policy in Brazil. The past orientation of the Government's agricultural policies was predominantly toward the promotion and establishment of large and commercially oriented agricultural enterprises as the main investment for developing the agricultural sector. It was feared that small-farmer programs would absorb considerable public expenditure without a commensurate increase in production. It was also assumed that large-scale agricultural, agro-industrial and industrial development would generate more employment opportunities to absorb redundant or low productivity agricultural labor than any program to assist small farmers directly. Previous efforts to help the rural poor were often restricted to social services, whereas the Government's new approach represents an attempt to achieve both distribution and production ends. To be sure, no overnight eradication of rural poverty, which has been endemic in some regions of Brazil, especially in the Northeast, for

decades, is likely to be forthcoming from these programs. Nevertheless, responsible efforts to improve the productivity of Northeast agriculture together with programs to increase industrial activity in the region already have resulted in a more rapid growth of per capita income in the Northeast than in Brazil as a whole; with the initiation of new programs this process is expected to continue under the Second Development Plan.

#### The Fertilizer Industry

24. At present, Brazil's fertilizer industry consists of a large number, about 25, of relatively small private sector and Government-owned companies, with a total production capacity of 270,000 tons of nitrogen and 690,000 tons of phosphate. The industry has concentrated on importing, mixing, blending and distribution, rather than on establishing large scale, efficient production facilities. Many companies compete at the retail level largely with imported materials, while only a few companies have their own, generally small, production facilities, which have to be protected when world fertilizer prices are low. The low levels of domestic production have been due, in part, to the fact that Brazil is not well endowed with easily exploitable natural resources for the production of chemical fertilizers. Natural gas, the ideal raw material for nitrogen fertilizers, has been found only in the Northeast and not in large quantities. On the other hand, large deposits of phosphate rock have recently been found in the center of the country, but they are of low nutrient concentration and only one deposit is currently being exploited on a large scale. Since at present the local industry has a small capital base and generates only limited amounts of funds for reinvestment, and since large-scale new facilities will require substantial investments, expansion in fertilizer production will have to be financed mainly from outside the present industry.

25. With the objective of protecting local fertilizer producers, and in view of the wide fluctuations in international fertilizer prices experienced in the past, the Government established a quota system that requires retailers to purchase a given proportion of domestic for each unit of imported fertilizer. The Government has changed this ratio periodically depending on price levels and local availability. When international prices were high, as in 1973-75, imports could be made freely; but under current low international prices, imports are permitted only if the retailer purchases a given proportion of local production. The Northeast is exempted from this quota system. As new, large-scale efficient fertilizer plants now planned enter into production, prices of domestic fertilizers are expected to move in line with long-term international prices, thereby obviating the need for the import quota system. The Government continuously reviews its fertilizer import policies and has agreed to exchange views with the Bank on this matter (see Section 3.04(b) of the draft Guarantee Agreement).

#### Fertilizer Consumption

26. Growth of fertilizer consumption in Brazil has been rapid but also erratic. From 1965 to 1972 fertilizer consumption increased at an annual average rate of 29%, but over the past three years it has levelled off, primarily as a result of the sharp increase in international prices during that

period and the scarcity of fertilizer in the world market. In 1975, fertilizer consumption stood at 1.9 million nutrient tons, of which 21% was nitrogen, 47% phosphate, and 32% potash. The relatively high ratio of phosphate consumption is agronomically justifiable, based on soil characteristics in Brazil. Sugar, coffee, soybeans and wheat are the major crops using fertilizers, accounting for 60% to 70% of total consumption. As mentioned in paragraph 21 above and paragraph 30 below, the Government is now stimulating greater fertilizer use in order to achieve increases in agricultural output. These Government efforts, and the fact that international fertilizer prices are now again at a lower level and are expected to remain so for the next few years, should result in increases in domestic fertilizer consumption averaging between 8% and 10% per year until 1985. By that time, fertilizer consumption would reach between 4.2 and 5.2 million nutrient tons, of which nitrogen is expected to represent between 1.4 and 1.8 million tons.

### Fertilizer Supply

27. Although domestic fertilizer production has grown at an average annual rate of 25% since 1965 and reached a level of 560,000 nutrient tons in 1974, it supplies less than 30% of consumption. In 1974, Brazil's imports of fertilizers cost US\$492 million, representing a considerable strain in Brazil's balance of payments. Since most Brazilian producers are not large enough to produce fertilizer on an economical basis, domestic fertilizer prices have been relatively high, except during 1973-75, when they were surpassed by abnormally high international prices. The relatively high prices of fertilizer in Brazil constitute a major obstacle to the Government's objectives of increased agricultural production and improvement of rural incomes. Therefore, in 1974, the Government launched a National Fertilizer Program for a major expansion of production based on large-scale, efficient plants, with a view to achieving self-sufficiency by the mid-1980s. The expansion of nitrogen production has been entrusted to PETROBRAS, a Government-owned petroleum company which has responsibility for the exploration and exploitation of the country's hydrocarbon resources. Owning two fertilizer plants that represent 55% of present installed nitrogen capacity, PETROBRAS has substantial experience in this subsector. In the next five years, PETROBRAS plans to complete four major nitrogen projects with a total production capacity of 1 million tons of nitrogen. The first project (expansion of PETROFERTIL, see paragraph 34) is scheduled to start production in 1977, the second, which is the proposed project, by 1979, and the other two by 1980 and 1981 respectively. By the mid-1980s, domestic nitrogen production should satisfy about 90% of the expected domestic demand of about 1.4 million nutrient tons of nitrogen. While it is clear that the expansion of the domestic fertilizer sector is desirable, the available data on the fertilizer market and on the marketing system is insufficient for effective planning of the sector's future development. To overcome this deficiency, the Government will undertake a comprehensive fertilizer market and marketing study (see paragraph 29 below). It is evident that fertilizer use and production will expand greatly and that increased agricultural production is a viable development goal for Brazil, but much more analysis and planning is necessary if fertilizer development is to take place efficiently.

28. To ensure proper coordination in the carrying out of the expansion of the fertilizer industry under the National Fertilizer Program, the Government in 1974 constituted a National Fertilizer Commission, with representatives from the Ministries of Industry and Commerce, Planning, Transport, Agriculture and Finance. This commission is also charged with the responsibility of formulating policy and planning to facilitate the growth of the fertilizer sector. It has concentrated largely, however, on increasing production, and little attention has been paid to the marketing and distribution aspects of the sector, as explained below.

#### Fertilizer Marketing and Distribution

29. About 90% of total fertilizer consumption is processed through blenders which are either owned by fertilizer manufacturers (25% of total), independent companies (65%) or cooperatives (10%). The Government intends that private firms continue to handle the marketing and distribution aspects of the sector. However, the rapid expansion of consumption expected in the next few years, and the changing pattern of supply, might create a severe strain on the existing fertilizer marketing and distribution network. At present, with imports providing much of the total supply, imports can be timed to match the major marketing season. The four-month period of May-August normally represents 50% of total fertilizer consumption. As supply switches to domestic production, with uniform production throughout the year, storage and financing will become more of a problem. Thus, an analysis of future storage and credit needs, both at wholesale and retail levels, is essential. Transportation could also become an important bottleneck for the increase in fertilizer consumption, especially in the regions where agricultural production will increase most rapidly. To analyze all these potential bottlenecks, and their effect on future fertilizer consumption, the Government has agreed to undertake a marketing and distribution study under terms of reference satisfactory to the Bank (see Section 3.04(a) of the draft Guarantee Agreement). This study would have the following objectives: (i) develop projections of demand and supply of fertilizer in Brazil; (ii) propose a mechanism to periodically update these projections; (iii) determine the requirements for further investments in facilities for manufacturing, mixing, storing, transporting and marketing fertilizers; and (iv) analyze fertilizer availability and use, including prices and subsidies, credit requirements, and the effects of cropping patterns and farm size and location on fertilizer use. The Government has also agreed to exchange views with the Bank with regard to the Government's fertilizer import and pricing policies and its plans for coordinated expansion of the Brazilian fertilizer industry (see Section 3.04(b) of the draft Guarantee Agreement).

30. As mentioned, international fertilizer prices were at a high level in 1973-75 causing a decline in the purchasing power of agricultural products in relation to fertilizers and inducing a levelling off of fertilizer consumption in Brazil. Concerned about the impact of lower fertilizer consumption on its plans for expanding agricultural production, in April 1975 the Government introduced a 40% price subsidy towards the purchase by farmers of fertilizers. At the same time, the Government required banks to charge 15% interest on fertilizer credit, which had been previously interest-free.

The net decrease in cost of fertilizer to the farmer resulting from the measure was in the neighborhood of 30 to 35%. The Government continuously reviews its policy towards prices and subsidies and it is likely that, since international prices have decreased and as domestic ex-factory prices decline in response to more efficient local production, the subsidy will be gradually reduced or eliminated. In conjunction with the price subsidy, the Government also established a system of indirect fertilizer price controls at the retail level, under which banks (which grant credit for more than 95% of all fertilizer sold) will not lend for fertilizer priced above the ceilings. This price control system has only recently been introduced so its effect is not yet known. But it is designed to limit profits especially on imported fertilizers to a reasonable level and to stabilize prices.

#### PART IV - THE PROJECT

##### A. Project Concept

31. The project consists of a 1,200 metric tons per day (TPD) ammonia plant, of which 830 TPD ammonia would be converted to 1,500 TPD of urea, and about 370 TPD ammonia would be sold directly to other fertilizer producers. The project would add about 325,000 tons per year of nitrogen to Brazil's fertilizer capacity which, as mentioned above, presently includes a nitrogen component of only 270,000 tons per annum. The project would be located in Araucaria, Parana, adjacent to a petroleum refinery that PETROBRAS is currently building. The refinery would provide the feedstock to the project (a high sulphur residual petroleum fraction that has limited alternative uses) as well as electric power, steam, water and other utilities.

##### B. Project Implementation

32. Following PETROBRAS' normal procedure that it has used in building its own refineries and ammonia plants (paragraph 27), BRASFERTIL, with the assistance of PETROBRAS project staff, will have overall responsibility for the project. Basic engineering (plus foreign procurement services) will be obtained from two internationally experienced engineering firms (Uhde and Lurgi, of the Federal Republic of Germany). Detailed engineering (and local procurement services) will be provided by an experienced Brazilian engineering firm, Natron-Consultoria e Projetos, S.A. Erection will be contracted to local firms. Uhde and Lurgi will provide supervisory personnel during engineering, procurement, erection and commissioning, as well as process guarantees for plant performance. Engineering work started in January 1976, and it is expected that the project will start commercial production in July 1979. The experience of PETROBRAS, which has built several refineries and fertilizer plants in Brazil, and the engineering contractors, who have extensive design, constructing, and operating experience in other similar plants, will facilitate project execution.

33. PETROBRAS is a Government-owned corporation established in 1953 with a legal monopoly for the exploration and exploitation of Brazil's

hydrocarbon resources. At present PETROBRAS has eight refineries in operation with a total capacity of about 1 million barrels per day (BPD) of crude and owns and operates a large retail system. It is currently building two new refineries, one at Araucaria (Parana) and the other at Sao Jose dos Campos (Sao Paulo), which would add by 1979 an additional 310,000 BPD of crude capacity. Brazil currently imports about 80% of its 900,000 barrels per day petroleum consumption. In order to reduce this import dependence, PETROBRAS has sharply increased its exploration program, and has announced its intention of entering into service contracts with foreign companies. As a result, its total investment program increased from US\$600 million in 1973 to US\$1.4 billion in 1975 and is expected to reach US\$1.8 billion per year during 1976 through 1978. During 1976-78, internal funds would provide about 54% of all funds required by PETROBRAS, with new equity supplying 13%, and loans 33%. On this basis, the financing program of PETROBRAS is sound, as is PETROBRAS' current financial position. As of December 31, 1975, its net worth was US\$3.6 billion. Its current ratio stood at 1.6:1 and its long-term debt to equity ratio at 25:75. During the year ending December 31, 1975, net income reached US\$679 million equivalent.

34. PETROBRAS is already substantially involved in the nitrogen fertilizer industry through its wholly owned subsidiary PETROQUISA, which owns two fertilizer companies, ULTRAFERTIL in Sao Paulo (about 85% of shares, with IFC owning 5%) and PETROFERTIL in Bahia (100% of shares). ULTRAFERTIL was established in 1966 with majority ownership in the hands of Phillips Petroleum Company, a US petroleum and fertilizer company. IFC participated in the financing of this company providing US\$11.2 million in equity and loans. Financial problems, related to technical difficulties that led to low capacity utilization, caused Phillips to withdraw in 1974 and PETROBRAS acquired all of Phillips interest in ULTRAFERTIL. Following an improvement in the production of all ULTRAFERTIL units, and with the substantial fertilizer price increases in 1974, ULTRAFERTIL was able to earn a large net income in that year. ULTRAFERTIL and PETROFERTIL, with an installed nutrient capacity of about 150,000 TPY, account for about 55% of the present nitrogen production capacity of Brazil. PETROFERTIL is undergoing a substantial expansion program which would add another 225,000 TPY of nitrogen capacity in 1977.

35. PETROBRAS has recently created a new, wholly owned subsidiary, Petrobras Fertilizantes, S.A. (BRASFERTIL), to own and operate the proposed project in Araucaria and also the two other ammonia/urea projects to be implemented shortly. Staff for the plant will be recruited largely from other PETROBRAS operations, including existing nitrogen fertilizer units, and would include the staff at PETROBRAS now in charge of the execution of the project. Adequate training will be provided under an existing and extensive training program of PETROBRAS and by the two engineering contractors. The new company will be a public corporation and PETROBRAS intends eventually to offer shares for sale, particularly to existing private sector fertilizer companies.

#### Production and Market Aspects

36. The ammonia plant will be based on partial oxidation technology (Shell process) and will be a single train installation. The urea plant,

based on Stamicarbon (Netherlands) technology, is also a single train design. Both units would be the first of their design and size in Brazil but represent modern, commercially proven technology. The ammonia plant design is based on a successfully operating unit, owned by Veba-Chemie in the Federal Republic of Germany, that was designed and built by the same German engineering companies, Uhde and Lurgi, that will build the Araucaria project. The two companies are also supplying the basic design for similar units in two IDA-financed projects now under construction in India-Nangal (Report No. 46-IN) and Sindri (Report No. 569-IN). The ammonia plant will consume about 1,400 TPD of heavy residual petroleum for both feedstock and fuel to be supplied by the adjacent Araucaria refinery which will be the only source of feedstock, since the raw material is not easily transported. The aforementioned level of consumption will represent about 44% of the expected heavy residual output of the refinery. The balance not consumed by the plant will be sold for industrial steam generation and fuel application after blending with lighter fractions to reduce viscosity and sulphur. To ensure the supply of feedstock and utilities to BRASFERTIL, PETROBRAS and BRASFERTIL have agreed to enter a long-term contract regarding the supply and pricing of feedstock and of the utilities from the refinery (see Section 4 of the draft Shareholders Agreement). Effluents from the plant will be controlled to reasonable levels and environmental considerations are satisfactory.

37. Ammonia and urea from the proposed project will be marketed in the Center Region of Brazil, of which the States of Sao Paulo and Parana have traditionally accounted for more than 90% of the Region's fertilizer use. The Center Region is expected to account for about 60% of Brazil's fertilizer consumption in the next decade or so. PETROBRAS intends to use present channels for the marketing of the output of the project. In particular, it would use its subsidiary, ULTRAFERTIL, which has a strong marketing organization. ULTRAFERTIL does not produce urea and is short of ammonia, but markets significant quantities of both at present. PETROBRAS also plans to distribute the output of BRASFERTIL through the large number of blenders and dealers now operating in the Center Region.

38. Nitrogen supply and demand are forecast to be in substantial balance in the Center Region by 1982 after both Araucaria and the other PETROBRAS ammonia/urea plant in Paulinea, 1/ Sao Paulo, reach full production. After 1982, a deficit is expected to reappear as consumption increases. A third nitrogen fertilizer plant for the Center would be needed after the mid-1980s. Although these assumptions are highly tentative, the forecast indicates that, though the market for the Araucaria project is not a major problem, the projected close balance in supply and demand emphasizes the need for more attention to marketing. As mentioned in paragraph 29 above, the supply and demand situation in Brazil will be closely monitored by the Government and the marketing and distribution study will provide the basis for planning the necessary improvements in the distribution system.

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1/ The Inter-American Development Bank is considering financial assistance for this project.

C. Project Cost and Financing

39. The project requires financing of US\$272 million equivalent, including working capital and interest during construction, of which US\$140 million is in foreign exchange. The capital cost, which is summarized below, is based on prices as of the end of 1975 and includes provisions for physical contingencies and price escalation. Price escalation is relatively low since engineering has already started (January 1976) and most equipment will be ordered on a fixed price basis during 1976. The project qualifies for 80% exemption from import duties.

ARAUCARIA - SUMMARY CAPITAL COST ESTIMATE

(in US\$ millions)

	<u>Foreign Exchange</u>	<u>Local Currency</u>	<u>Total</u>	<u>%</u>
Equipment and Materials	74.8	44.8 /1	119.6	62
Engineering and Licenses	9.8	6.1	15.9	8
Land and Civil Works	2.2	13.9	16.1	9
Erection, Supervision and Pre-Operating Costs	<u>7.9</u>	<u>32.8</u>	<u>40.7</u>	<u>21</u>
Base Cost Estimates /2	94.7	97.6	192.3	100
Physical Contingencies /3	8.0	8.2	16.2	
Price Escalation /4	<u>12.5</u>	<u>13.8</u>	<u>26.3</u>	
Installed Cost	115.2	119.6	234.8	
Working Capital	6.5	6.9	13.4	
Interest During Construction	<u>18.3</u>	<u>5.4</u>	<u>23.7</u>	
Financing Required	140.0	131.9	271.9	

/1 Includes US\$3.6 million for import duties.

/2 At end of 1975 prices.

/3 10% for directly imported equipment and duties; and 9% for local purchases excluding engineering and land.

/4 14% for equipment, civil works, erection, local supervision, physical contingencies.

40. The financing plan for the project envisages that 41% of the financing required (or US\$112 million) will be provided as equity by PETROBRAS, with the balance provided as suppliers' credits (US\$35 million), as loans from foreign private lenders (US\$20 million), the Banco Nacional do Desenvolvimento Economico (US\$55 million) and the World Bank (US\$50 million) (see Section 3(b) of the draft Shareholder Agreement).

41. PETROBRAS proposes to obtain a loan of at least US\$20 million through one or more foreign private lenders. This loan may be associated with the proposed Bank loan, in a co-financing arrangement similar to that associated with the Bank's 1975 loan to Companhia Siderurgica Nacional (Loan 1151-BR), if PETROBRAS is able thereby to obtain more favorable terms from the private lenders. This loan could either take the form of a long-term private placement with institutional investors, or a medium-term Eurodollar operation. The terms of a long-term operation would be 10 to 15 years, including about 4 years of grace, at a fixed interest rate. PETROBRAS has already established lines of suppliers' credit which are being used as needed by its several ongoing and future projects. Considering the likely competitive sources of imported equipment and the existing as well as possible sources of suppliers' credits, the project is expected to be able to utilize efficiently about US\$35 million of these credits. These tied credits will have maturities of five to ten years, including about three years of grace at an average interest rate of about 10% per year. Since the construction period is three-and-one-half years and the grace period of the suppliers' credits is at most three years only, some refinancing of the loans would be necessary. However, it is likely that the suppliers' credits will be extended to PETROBRAS and not made directly to the project entity. In this case PETROBRAS will onlend the equivalent amount to the project with a grace period of four years or up to about mid-1980, at which time the project will have been in production for about one year. On the other hand, if the credit is extended directly to the project entity, then PETROBRAS will provide additional funds (as loans to the project) for principal repayments during the construction period (see Section 3(c) of the draft Shareholders Agreement).

42. The principal amount of the BNDE loan would be subject to monetary correction, in accordance with the domestic inflation rate, with a real interest rate of 4% per annum. BRASFERTIL has applied to BNDE for a loan in constant January 1976 cruzeiros of about US\$47 million equivalent, with monetary correction during the disbursement period adding an estimated US\$8 million for a total disbursement of US\$55 million equivalent in current terms. This loan amount would be reduced if the company decides to obtain funds from foreign private lenders in excess of US\$20 million. Given the Government's policy of periodically adjusting the exchange rate on the basis of the difference in international and domestic inflation rates, the BNDE loan would be equivalent to a conventional foreign loan with an interest rate of about 13% annually. PETROBRAS has asked BNDE for a loan with a maturity of 15 years.

43. The World Bank loan of US\$50 million equivalent is proposed for 15 years, including 4-1/2 years of grace at 8.5% annual interest plus a 1.5% guarantee fee to the Government. The Bank loan, the BNDE loan and possibly the foreign private loans as well, will be made to BRASFERTIL. The company will bear the foreign exchange risk for all the foreign loans. Should any shortfall occur in the financing plan, or should the project require additional funds, PETROBRAS will provide the necessary funds in the form of

equity and/or loans to complete the project (see Section 3(a) of the draft Shareholders Agreement). The funds will be provided in a form that will ensure that BRASFERTIL's debt to equity ratio at project completion will not exceed 60:40, and its current ratio will not be lower than 1.2 to 1.0 (see Section 3(a) of the draft Shareholders Agreement). The expected cash generation and borrowing program of PETROBRAS will be adequate to finance its investment programs including the equity contribution for this project.

D. Procurement

44. The proceeds from the Bank loan would finance expenditures for: (a) equipment and materials procured through international competitive bidding (US\$26.0 million); (b) imported items costing US\$100,000 or less procured through international shopping <sup>1/</sup> (US\$3.4 million); (c) proprietary, limited or long delivery items critical to the timely completion of the project, also procured through international shopping (US\$7.0 million); and (d) licenses, engineering and supervision services (US\$13.6 million) that are already contracted using acceptable procedures. Although local suppliers would be granted a margin of preference of 15% (or the import duty rate, if lower) for purposes of bid evaluation, foreign suppliers are expected to provide all of the items to be financed by the proposed loan. Retroactive financing of up to US\$3.5 million would cover payments made after January 1, 1976, for licenses, engineering and supervision services (about US\$3 million) and for item (c) above (about US\$0.5 million) (see paragraph 2(a) of Schedule 1 to the draft Loan Agreement).

45. A separate list of goods, jointly determined by PETROBRAS and the association of local manufacturers, will be reserved for local procurement. Domestic suppliers are expected to provide equipment and supplies totalling some US\$68 million (including contingencies and price escalation), and PETROBRAS estimates that on average local equipment would cost about 25-30% more than the CIF price of imports. This percentage is lower than the average customs duty for the equipment concerned. Finally, there will be a third list of goods to be financed by suppliers' credits. Selection of suppliers will take into account, in addition to price and quality, the terms and conditions of the proposed financing.

E. Financial and Economic Benefits

46. Over the life of the project the average international FOB price of urea is expected to average about US\$160/ton (bagged) in constant 1975 US dollars. This price is much lower than the price of about US\$300/ton during 1974 and early 1975. By April 1976, international prices had dropped to about US\$110-150 per ton due to supply surpluses; they are expected to remain low for a year or so, and then gradually increase to US\$160 per ton. Since the project's output will substitute for imports, freight and handling charges

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<sup>1/</sup> International shopping, as a procurement procedure, requires the Borrower to obtain quotations from a reasonable number of capable suppliers.

to the market area are added to arrive at a delivered price of US\$215/ton (bagged) for urea which is used for the economic analysis. The economic price of ammonia, US\$180/ton delivered, was derived from the urea price, assuming that, on a nutrient basis, the nitrogen in urea is twice as valuable as the nitrogen in ammonia.

47. The financial analysis (in constant 1975 US dollars) assumes an ex-factory urea price of US\$195/ton, which is about 90% of the estimated full cost of imports delivered to the market area. Ammonia, as an intermediate product, is priced at the full cost of imports, i.e., at US\$180/ton. The average production cost, at 90% capacity utilization, is about US\$120/ton of ammonia and US\$100/ton of bagged urea. These cost figures are based on a feedstock and fuel oil cost of US\$40/ton, which is US\$5 higher than the present cost of US\$35/ton. The project would then have a financial rate of return of 22% before and 18% after income taxes. The financial forecast indicates a strong financial situation for BRASFERTIL, with a debt service coverage ratio in excess of 2.5 and the capacity to distribute dividends by 1980. The forecasts for BRASFERTIL assume a dividend payment equivalent to 10% of the equity, which is comparable to the dividend payments of successful Brazilian enterprises. Even with this dividend rate, the enterprise is expected to accumulate substantial funds for reinvestment. The debt-equity ratio would improve rapidly from 56:44 in 1979 to 31:69 by 1982. BRASFERTIL has agreed to maintain, at all times after project completion, a debt-equity ratio of 60:40 or better and a current ratio of at least 1.2 to 1.0. It will not incur any debt if the projected debt service coverage ratio would thereby fall below 1.5 to 1.0, nor will it pay dividends (other than dividends on preferred shares), prepay debt or make any cash distribution if the current ratio would thereby fall below 1.5 to 1.0 (see Section 5.04 of the draft Loan Agreement).

48. The annual economic value of the project's output of about 292,000 TPY of nitrogen is estimated at US\$107 million in constant 1975 dollars, and the economic rate of return at 24%. Although the feedstock is not a readily marketable commodity, it has been imputed an economic price of US\$50/ton on the basis that it can be blended with some lighter petroleum fraction (e.g., kerosene) and upgraded to commercial heavy fuel oil specifications, which would then have an economic price of US\$65/ton. The economic production cost is about US\$85/ton of bagged urea and about US\$100/ton of ammonia. The project's economies of scale, its use of a relatively inexpensive feedstock, and its import substitution role account for the favorable rate of return. The high economic rate of return justifies the high priority accorded by the Government to the project and the fertilizer sector in general.

#### F. Conclusions

49. The project has a high economic return and will increase the availability and stability of fertilizer supply in Brazil at a low cost; it will thus help alleviate the balance-of-payments constraint to the country's growth. Coupled with the proposed fertilizer study, it should permit increased efficiency in fertilizer use in the center of Brazil, and contribute substantially to improved agricultural production and exports.

50. PETROBRAS and the engineering firms have the management and technical capabilities to minimize project risks in these areas. Since the project enjoys economies of scale and would be one of the most efficient producers, product pricing will not be a major risk. Nonetheless, the Government has agreed that it will not take any action with regard to the price of ammonia, urea and feedstock, that may prevent BRASFERTIL, operating efficiently, from covering its costs, servicing its debts, and earning a reasonable return on its invested capital (see Section 3.03 of the draft Guarantee Agreement). To ensure that fertilizer marketing will not become a problem, the Government will investigate in greater depth the market and marketing of fertilizer to identify bottlenecks that may depress consumption, especially inadequacies in the distribution, storage, blending facilities, and the wholesale and dealer network. The proposed marketing study will identify potential bottlenecks and investment requirements and recommend steps to improve the marketing system.

#### PART V - LEGAL INSTRUMENTS AND AUTHORITY

51. The draft Loan Agreement between Petrobras Fertilizantes, S.A. and the Bank, the draft Petrobras Shareholder Agreement between the Bank and PETROBRAS, the draft Guarantee Agreement between the Federative Republic of Brazil and the Bank, the Report of the Committee provided for in Article III, Section 4(iii) of the Articles of Agreement and the text of a draft resolution approving the proposed loans are being distributed to the Executive Directors separately. Special conditions of the project are listed in Section III of Annex IV.

52. I am satisfied that the proposed loan would comply with the Articles of Agreement of the Bank.

#### PART VI - RECOMMENDATION

53. I recommend that the Executive Directors approve the proposed loan.

Robert S. McNamara  
President

Attachments  
April 27, 1976



TABLE 3A  
SOCIAL INDICATORS DATA SHEET

LAND AREA (THOU KM <sup>2</sup> )	BRAZIL			REFERENCE COUNTRIES (1970)		
	1960	1970	MOST RECENT ESTIMATE	MEXICO	URUGUAY	JAPAN **
TOTAL	8512.0					
ARABLE	..					
GMP PER CAPITA (US\$)	300.0	530.0	760.0	720.0	890.0	2570.0
<b>POPULATION AND VITAL STATISTICS</b>						
POPULATION (MID-YR, MILLION)	69.8	92.8	101.1	50.7	2.9	104.3
POPULATION DENSITY PER SQUARE KM.	8.0	11.0	12.0	26.0	16.0	280.0
PER SQUARE KM, ARABLE LAND	..	30.0	..	..	18.0	..
<b>VITAL STATISTICS</b>						
CRUDE BIRTH RATE PER THOUSAND	42.0	38.0	37.0	43.0	22.0	19.0
CRUDE DEATH RATE PER THOUSAND	12.0	10.0	9.0	10.0	9.0	7.0
INFANT MORTALITY RATE (/THOU)	180.0	110.0	..	69.0	43.0	13.1
LIFE EXPECTANCY AT BIRTH (YRS)	50.0	61.0	63.0	61.0	69.0	72.0
GROSS REPRODUCTION RATE	2.6	2.6	2.5	3.1	1.4	1.0
<b>POPULATION GROWTH RATE (%)</b>						
TOTAL	3.0	2.9	2.9	3.5	1.3	1.0
URBAN	5.5	5.0	5.0	5.0	..	2.5
URBAN POPULATION (% OF TOTAL)	46.0	56.0	58.0	59.0	..	72.0
<b>AGE STRUCTURE (PERCENT)</b>						
0 TO 14 YEARS	43.0	42.0	..	46.0	28.0	24.0
15 TO 64 YEARS	54.0	55.0	..	50.0	64.0	68.9
65 YEARS AND OVER	3.0	3.0	..	4.0	8.0	7.1
<b>AGE DEPENDENCY RATIO</b>						
ECONOMIC DEPENDENCY RATIO	0.9	0.8	..	1.0	0.6	0.5
	1.6	1.5	..	2.0	1.0	0.6
<b>FAMILY PLANNING-</b>						
ACCEPTORS (CUMULATIVE, THOU)	..	250.0	..	..	..	..
USFRS (% OF MARRIED WOMEN)	..	1.6	..	..	..	..
<b>EMPLOYMENT</b>						
TOTAL LABOR FORCE (THOUSAND)	22700.0	29600.0	..	13000.0	1100.0	53300.0
LABOR FORCE IN AGRICULTURE (%)	52.0	44.0	..	40.0	17.0	19.0
UNEMPLOYED (% OF LABOR FORCE)	..	..	..	..	8.0	1.2
<b>INCOME DISTRIBUTION</b>						
% OF PRIVATE INCOME REC'D BY-						
HIGHEST 5% OF POPULATION	28.0	35.0	..	37.8	19.0	14.2
HIGHEST 20% OF POPULATION	54.0	62.0	..	43.2	47.5	37.6
LOWEST 20% OF POPULATION	4.0	3.0	..	4.2	4.4	8.8
LOWEST 40% OF POPULATION	12.0	10.0	..	10.2	14.2	22.3
<b>DISTRIBUTION OF LAND OWNERSHIP</b>						
% OWNED BY TOP 10% OF OWNERS						
	..	45.0	..	..	..	..
% OWNED BY SMALLEST 10% OWNERS						
	..	1.5	..	..	..	..
<b>HEALTH AND NUTRITION</b>						
POPULATION PER PHYSICIAN	2170.0	1950.0	2070.0	1440.0	940.0	840.0
POPULATION PER NURSING PERSON	..	3300.0	2920.0	1570.0	3560.0	240.0
POPULATION PER HOSPITAL BED	275.0	260.0	..	930.0	160.0	40.0
<b>PER CAPITA SUPPLY OF -</b>						
CALORIES (% OF REQUIREMENTS)	102.0	109.0	110.0	110.0	107.0	106.0
PROTEIN (GRAMS PER DAY)	61.0	64.0	65.0	65.0	96.0	76.0
-OF WHICH ANIMAL AND PULSE	38.0	39.0	..	28.0	64.0	45.0
<b>DEATH RATE (/THOU) AGES 1-4</b>						
	..	..	..	11.0	1.3	1.0
<b>EDUCATION</b>						
<b>ADJUSTED ENROLLMENT RATIO</b>						
PRIMARY SCHOOL	100.0	130.0	..	104.0	118.0	100.0
SECONDARY SCHOOL	11.0	27.0	..	23.0	56.0	90.0
<b>YEARS OF SCHOOLING PROVIDED (FIRST AND SECOND LEVEL)</b>						
	13.0	13.0	13.0	12.0	12.0	12.0
<b>VOCATIONAL ENROLLMENT (% OF SECONDARY)</b>						
	19.0	17.0	18.0	24.0	22.0	20.0
<b>ADULT LITERACY RATE (%)</b>						
	61.0	68.0	..	76.0	91.0	99.0
<b>HOUSING</b>						
<b>PERSONS PER ROOM (AVERAGE)</b>						
OCCUPIED DWELLINGS WITHOUT PIPED WATER (%)	..	1.0	1.1	2.2	..	1.0
ACCESS TO ELECTRICITY (% OF ALL DWELLINGS)	..	73.0	67.0	61.0	..	5.0
<b>RURAL DWELLINGS CONNECTED TO ELECTRICITY (%)</b>						
	..	8.0	11.0	28.0	..	..
<b>CONSUMPTION</b>						
RADIO RECEIVERS (PER THOU POP)	66.0	60.0	61.0	276.0	346.0	551.0
PASSENGER CARS (PER THOU POP)	7.0	25.0	29.0	25.0	42.0	85.0
ELECTRICITY (KWH/YR PER CAP)	328.0	487.0	544.0	586.0	762.0	3486.0
NEWSPRINT (KG/YR PER CAP)	3.3	2.7	2.6	3.1	7.2	18.9

SEE NOTES AND DEFINITIONS ON REVERSE

Unless otherwise noted, data for 1960 refer to 1959-1961, for 1970 to 1968-1970, and for Most Recent Estimate to 1971-1973.

\*\* Japan has been selected as an objective country since the Brazilian Government has shown particular interest in Japan's developmental experience; also, the two governments have conducted joint studies to identify possible future economic problems of Brazil on the basis of the experiences in Japan.

<u>BRAZIL</u>	1960	/a Economically active population,
	1970	/a Economically active population; /b Hospital personnel; /c Inside only.
		<b>MOST RECENT ESTIMATE:</b> /a Hospital personnel; /b Inside only.
<u>MEXICO</u>	1970	/a Households; /b 1964-66; /c Inside only.
<u>URUGUAY</u>	1970	/a 1967, households.
<u>JAPAN</u>	1970	/a Households.

R7, February 11, 1976

#### DEFINITIONS OF SOCIAL INDICATORS

##### Land Area (thou km<sup>2</sup>)

Total - Total surface area comprising land area and inland waters.

Arable - Most recent estimate of land area used temporarily or permanently for cultivation, pastures, market and kitchen gardens or to lie fallow.

GNP per capita (US\$) - GNP per capita estimates at market prices, calculated by same conversion method as World Bank Atlas (1972-74 basis).

##### Population and vital statistics

Population (mid-yr. million) - As of July first; if not available, average of two end-year estimates.

Population density - per square km - Mid-year population per square kilometer (100 hectares) of total area.

Population density - per square km of arable land - Computed as above for arable land only.

##### Vital statistics

Crude birth rate per thousand - Annual live births per thousand of mid-year population; usually five-year averages ending in 1960, 1970 and 1975 for developing countries.

Crude death rate per thousand - Annual deaths per thousand of mid-year population; usually five-year averages ending in 1960, 1970 and 1975 for developing countries.

Infant mortality rate (/thou) - Annual deaths of infants under one year of age per thousand live births.

Life expectancy at birth (yrs) - Average number of years of life remaining at birth; usually five-year averages ending in 1960, 1970 and 1975 for developing countries.

Gross reproduction rate - Average number of live daughters a woman will bear in her normal reproductive period if she experiences present age-specific fertility rates; usually five-year averages ending in 1960, 1970 and 1975 for developing countries.

Population growth rate (%) - total - Compound annual growth rates of mid-year population for 1950-60, 1960-70, and 1960 to most recent year.

Population growth rate (%) - urban - Computed like growth rate of total population; different definitions of urban areas may affect comparability of data among countries.

Urban population (% of total) - Ratio of urban to total population; different definitions of urban areas may affect comparability of data among countries.

Age structure (percent) - Children (0-14 years), working-age (15-64 years), and retired (65 years and over) as percentages of mid-year population.

Age dependency ratio - Ratio of population under 15 and 65 and over to those of ages 15 through 64.

Economic dependency ratio - Ratio of population under 15 and 65 and over to the labor force in age group of 15-64 years.

Family planning - acceptors (cumulative, thou) - Cumulative number of acceptors of birth-control devices under auspices of national family planning program since inception.

Family planning - users (% of married women) - Percentages of married women of child-bearing age (15-44 years) who use birth-control devices to all married women in same age group.

##### Employment

Total labor force (thousand) - Economically active persons, including armed forces and unemployed but excluding housewives, students, etc.; definitions in various countries are not comparable.

Labor force in agriculture (%) - Agricultural labor force (in farming, forestry, hunting and fishing) as percentage of total labor force.

Unemployed (% of labor force) - Unemployed are usually defined as persons who are able and willing to take a job, out of a job on a given day, remained out of a job, and seeking work for a specified minimum period not exceeding one week; may not be comparable between countries due to different definitions of unemployed and source of data, e.g., employment office statistics, sample surveys, compulsory unemployment insurance.

Income distribution - Percentage of private income (both in cash and kind) received by richest 5%, richest 20%, poorest 20%, and poorest 40% of population.

Distribution of land ownership - Percentages of land owned by wealthiest 10% and poorest 10% of land owners.

##### Health and Nutrition

Population per physician - Population divided by number of practicing physicians qualified from a medical school at university level.

Population per nursing person - Population divided by number of practicing male and female graduate nurses, "trained" or "certified" nurses, and auxiliary personnel with training or experience.

Population per hospital bed - Population divided by number of hospital beds available in public and private general and specialized hospital and rehabilitation centers; excludes nursing homes and establishments for custodial and preventive care.

Per capita supply of calories (% of requirements) - Computed from energy equivalent of net food supplies available in country per capita per day; available supplies comprise domestic production, imports less exports, and changes in stock; net supplies exclude animal feed, seeds, quantities used in food processing and losses in distribution; requirements were estimated by FAO based on physiological needs for normal activity and health considering environmental temperature, body weights, age and sex distributions of population, and allowing 10% for waste at household level.

Per capita supply of protein (grams per day) - Protein content of per capita net supply of food per day; net supply of food is defined as above; requirements for all countries established by USDA Economic Research Services provide for a minimum allowance of 60 grams of total protein per day, and 20 grams of animal and pulse protein, of which 10 grams should be animal protein; these standards are lower than those of 75 grams of total protein and 23 grams of animal protein as an average for the world, proposed by FAO in the Third World Food Survey.

Per capita protein supply from animal and pulse - Protein supply of food derived from animals and pulses in grams per day.

Death rate (/thou) ages 1-4 - Annual deaths per thousand in age group 1-4 years, to children in this age group; suggested as an indicator of malnutrition.

##### Education

Adjusted enrollment ratio - primary school - Enrollment of all ages as percentage of primary school-age population; includes children aged 6-11 years but adjusted for different lengths of primary education; for countries with universal education, enrollment may exceed 100% since some pupils are below or above the official school age.

Adjusted enrollment ratio - secondary school - Computed as above; secondary education requires at least four years of approved primary instruction; provides general, vocational or teacher training instructions for pupils of 12 to 17 years of age; correspondence courses are generally excluded.

Years of schooling provided (first and second levels) - Total years of schooling; at secondary level, vocational instruction may be partially or completely excluded.

Vocational enrollment (% of secondary) - Vocational institutions include technical, industrial or other programs which operate independently or as departments of secondary institutions.

Adult literacy rate (%) - Literate adults (able to read and write) as percentage of total adult population aged 15 years and over.

##### Housing

Persons per room (average) - Average number of persons per room in occupied conventional dwellings in urban areas; dwellings exclude non-permanent structures and unoccupied parts.

Occupied dwellings without piped water (%) - Occupied conventional dwellings in urban and rural areas without inside or outside piped water facilities as percentage of all occupied dwellings.

Access to electricity (% of all dwellings) - Conventional dwellings with electricity in living quarters as percent of total dwellings in urban and rural areas.

Rural dwellings connected to electricity (%) - Computed as above for rural dwellings only.

##### Consumption

Radio receivers (per thou pop) - All types of receivers for radio broadcasts to general public per thousand of population; excludes unlicensed receivers in countries and in years when registration of radio sets was in effect; data for recent years may not be comparable since most countries abolished licensing.

Passenger cars (per thou pop) - Passenger cars comprise motor cars seating less than eight persons; excludes ambulances, hearses and military vehicles.

Electricity (kwh/yr per cap) - Annual consumption of industrial, commercial, public and private electricity in kilowatt hours per capita; generally based on production data, without allowance for losses in grids but allowing for imports and exports of electricity.

Newsprint (kg/yr per cap) - Per capita annual consumption in kilograms estimated from domestic production plus net imports of newsprint.

ECONOMIC DEVELOPMENT DATA  
(In millions of U.S. dollars)

	Actual		1973	Estimated		Projected		Average Annual Growth Rates			As percent of GDY		
	1971	1972		1974	1975	1980	1970-74	1974-76	1976-80	1970	1974	1980	
<b>NATIONAL ACCOUNTS /1</b>													
Amounts in 1973 prices and exchange rates													
Gross domestic product	62,710	69,608	77,891	85,369	88,357	121,700	11.0	4.2	7.0	100.6	100.6	100.7	
Gains from terms of trade (+)	- 609	- 598	-	- 469	- 965	- 819	.	.	.	- 0.6	- 0.6	- 0.7	
Gross domestic income	62,101	69,010	77,891	84,900	105,278	120,881	11.0	3.7	7.1	100.0	100.0	100.0	
Imports (incl. NPS)	5,199	6,357	7,577	10,073	9,183	11,264	24.0	-5.6	5.7	7.6	11.9	9.3	
Exports (import capacity)	4,098	5,218	6,596	5,987	6,705	10,784	10.2	10.2	10.6	7.2	7.1	8.9	
Resource gap	1,101	1,139	981	4,086	2,478	480	.	.	.	0.4	4.8	0.4	
Consumption	50,437	54,547	61,529	66,578	69,020	91,586	9.7	3.0	6.5	82.2	78.4	75.8	
Investment	12,765	15,602	17,343	22,408	20,910	29,775	22.0	0.5	7.1	18.2	26.4	24.6	
Domestic savings	11,664	14,463	16,362	18,322	18,432	29,295	16.4	6.7	8.9	17.8	21.6	24.2	
National savings	11,078	13,784	15,655	17,722	17,482	27,933	17.0	5.8	9.0	16.9	20.9	23.1	
<b>MERCHANDISE TRADE</b>													
Annual data at current prices													
As percent of total													
Imports													
Capital goods	1,241	1,734	2,143	3,108	3,569	7,522	31.0	14.3	16.7	42.8	24.8	36.1	
Intermediate goods (excl. fuels)	1,210	1,451	2,233	5,091	4,636	7,343	57.0	-5.4	12.6	35.2	40.6	35.3	
Fuels and related materials	316	449	727	2,812	3,022	4,344	63.0	5.6	8.5	9.4	22.4	20.9	
of which: Petroleum	251	344	605	2,495	2,650	3,711	71.0	4.3	8.1	6.9	19.9	17.8	
Consumption goods	478	598	1,089	1,519	1,221	1,610	42.0	-11.0	6.7	15.0	12.1	7.7	
Total merchandise imports (fob)	3,245	4,232	6,192	12,530	12,448	20,819	50.0	1.9	12.5	100.0	100.0	100.0	
Exports													
Primary products (excl. fuels)	2,315	3,063	4,718	5,606	6,987	13,142	25.0	17.0	14.4	84.8	70.4	61.2	
Fuels and related materials	19	36	52	65	70	101	55.0	7.4	7.7	.	0.8	0.5	
of which: Petroleum	8	16	16	30	30	40	.	.	.	0.4	0.4	0.2	
Manufactured goods	570	892	1,429	2,297	2,793	8,231	55.0	22.5	24.0	14.8	28.8	38.3	
Total merchandise exports (fob)	2,904	3,991	6,199	7,968	9,850	21,474	31.0	18.6	17.7	100.0	100.0	100.0	
Merchandise trade indices			1973=100										
Export price index	67	73	100	134	140	201	18.4	4.6	8.2	.	.	.	
Import price index	77	82	100	145	158	216	14.3	7.9	6.4	.	.	.	
Terms of trade index	87	89	100	93	88	93	.	.	.	.	.	.	
Export volume index	71	88	100	96	113	172	10.0	13.7	8.8	.	.	.	
<b>VALUE ADDED BY SECTOR /2</b>													
Annual data at 1973 prices and exchange rates													
As percent of GDP													
Agriculture	8,850	9,212	9,535	10,346	10,760	13,995	6.8	4.5	5.5	14.6	15.1	14.3	
Industry and mining	15,875	18,066	20,776	22,480	23,222	32,805	12.0	4.2	7.7	32.7	32.8	33.6	
Services	25,554	28,732	32,140	35,620	36,860	50,777	11.1	4.3	7.0	52.7	52.1	52.1	
Total	50,279	55,810	62,451	68,446	70,842	97,577	11.0	4.2	7.0	100.0	100.0	100.0	
<b>PUBLIC FINANCE</b>													
Annual data at 1973 prices and exchange rates													
(Federal Government)													
Current receipts	6,168	7,116	8,629	9,757	10,399	15,540	16.9	6.2	9.0	9.4	11.5	12.8	
Current expenditures	3,553	3,858	4,227	4,577	5,032	7,107	8.5	9.1	6.9	5.9	5.4	5.9	
Budgetary saving	2,615	3,258	4,402	5,180	5,367	8,433	28.0	3.5	11.0	3.5	6.1	7.0	
Other public saving	3,393	3,669	4,832	5,825	6,348	10,510	15.5	9.0	10.7	5.0	6.9	8.7	
Public sector fixed investment	6,404	8,037	8,705	9,667	10,344	15,198	15.8	7.5	8.0	9.8	11.4	12.6	

DETAIL ON PUBLIC SECTOR	US\$ million at 1973 prices and ER	
	1971-74	% of Total
<b>INVESTMENT PROGRAM</b>		
Social Sectors	4,504	11.3
Agriculture	187	0.5
Industry and Mining	6,060	15.2
Power	5,499	13.8
Transport and Communications	7,384	18.6
Regional development	1,441	3.6
Other /3	14,712	37.0
Total expenditure	39,787	100.0
<b>FINANCING</b>		
Public sector savings	33,674	84.6
Foreign borrowings (net)	5,762	14.5
Domestic borrowings	351	0.9
Total financing	39,787	100.0

LABOR FORCE AND OUTPUT PER WORKER	Total labor force					Value added per worker (1970 prices & exc. rates)				
	In millions		% of total		1960-70 Growth rate	In U.S. dollars		% of average		1960-70 Growth rate
	1960	1970	1960	1970		1960	1970	1960	1970	
Agriculture	12.2	13.1	54.0	44.4	0.7	--	402	--	33	--
Industry	3.0	5.3	13.3	18.0	5.8	--	2,222	--	182	--
Service	7.4	11.1	32.7	37.6	4.1	--	1,706	--	140	--
Total	22.6	29.5	100.0	100.0	3.1	--	1,220	--	100	--

. not applicable  
.. not available

/1 The national accounts data were revised in September 1974 to reflect data obtained in the 1970 census. GDP in 1970 has been revised upward by about 20%, mainly in the industrial sector. Revisions of the data for years prior to 1970 still have not been completed.

/2 Net domestic product at factor cost.

/3 Includes financial investment.

BALANCE OF PAYMENTS, EXTERNAL ASSISTANCE AND DEBT  
(In millions of U.S. dollars at current prices)

	Actual			Estimated	Projected						
	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1985
<b>SUMMARY BALANCE OF PAYMENTS</b>											
Exports (incl. NFS)	3,175	4,272	6,596	8,568	10,614	12,116	14,001	16,422	19,507	23,274	52,488
Imports (incl. NFS)	4,028	5,205	7,577	14,585	14,536	15,228	16,854	18,683	20,965	24,308	50,264
Resource balance (X-M)	- 853	- 933	- 981	- 6,017	- 3,922	- 3,112	- 2,853	- 2,261	- 1,458	- 1,034	- 2,224
Interest (net)	- 302	- 359	- 514	- 650	- 1,273	- 1,469	- 1,747	- 2,009	- 2,272	- 2,503	- 3,053
Direct investment income	- 166	- 202	- 220	- 240	- 270	- 304	- 342	- 384	- 432	- 486	- 877
Workers' remittance	-	-	-	-	-	-	-	-	-	-	-
Current Transfers (net)	14	5	27	23	40	50	50	50	50	50	50
Balance on current account	- 1,307	- 1,489	- 1,688	- 6,883	- 5,425	- 4,835	- 4,892	- 4,604	- 4,113	- 3,974	- 1,656
Private direct investment	168	318	940	845	940	1,035	1,135	1,275	1,435	1,615	2,908
Medium- and long-term loans											
Disbursements	835	1,099	1,376	1,800	2,025	2,226	2,443	2,654	3,004	3,397	6,218
-Repayments	- 441	- 525	- 670	- 720	- 779	- 745	- 793	- 868	- 1,062	- 1,282	- 2,867
Net disbursements	394	574	706	1,080	1,245	1,481	1,650	1,786	1,942	2,115	3,351
Financial credits											
Disbursements	1,442	3,396	3,151	5,017	3,819	4,509	5,054	5,258	5,386	5,587	1,524
-Repayments	- 641	- 860	- 1,058	- 1,300	- 1,579	- 2,190	- 2,946	- 3,715	- 4,130	- 4,500	- 4,404
Net disbursements	801	2,536	2,093	3,717	2,240	2,319	2,107	1,543	1,255	1,086	- 2,880
Capital transactions n.e.i.	504	626	377	194	-	-	-	-	-	-	-
Change in reserves (=increase)	- 560	- 2,565	- 2,428	1,049	1,000	-	-	-	- 519	- 836	- 1,723
<b>GRANT AND LOAN COMMITMENTS</b>								Actual	Estimated		
								1971	1972	1973	1974
<b>DEBT AND DEBT SERVICE</b>											
Medium- and long-term loans											
IBRD	256	455	199					4,122	5,509	6,496	9,096
IDB	133	180	250					211	296	440	619
Governments	199	249	270					608	758	953	1,081
Suppliers	324	350	775					819	1,054	1,393	1,700
Bonds	-	-	80					607	820	1,175	1,570
Loans n.e.i.	121	100	110					1,384	1,744	2,242	2,670
Total medium- and long-term loans	1,033	1,334	1,684	--							
<b>EXTERNAL PUBLIC DEBT</b>											
	Actual debt outstanding on March 31, 1974										
	Disbursed only			Percent							
IBRD	708			10.0	Public debt service 25.8 24.7 20.6 17.4						
IDB	252			3.6	Total debt service 43.6 40.8 34.0 31.2						
Governments	1,830			25.8	TDS + Invest. Inc. 48.8 45.6 37.3 34.0						
Suppliers	1,008			14.2	Average Terms on						
Bonds	149			2.1	Int. as % prior year DO & D 6.0 7.2 8.0 9.5						
Financial credits	2,875			40.5	Amort. as % prior year DO & D 17.4 18.4 17.3 16.6						
Public debt n.e.i.	273			3.8	IBRD debt outs. & disbursed 347 484 647 872						
Total public debt	7,095			100.0	IBRD as % public debt O & D 8.4 8.8 10.0 9.6						
					IBRD as % total debt O & D 5.2 5.0 5.1 5.0						
					IBRD as % public debt service 4.2 4.8 5.0 4.3						
					IBRD as % total debt service 2.5 2.9 2.9 2.7						

/1 Gross debt service less interest earned on reserves.

May 14, 1975

THE STATUS OF BANK GROUP OPERATIONS IN BRAZIL

A. SUMMARY STATEMENT OF LOANS  
(As of March 31, 1976)

<u>Loan No.</u>	<u>Year</u>	<u>Borrower</u>	<u>Purpose</u>	<u>Amount Less Cancellations</u> (US\$ million)	<u>Undisbursed</u>
Twenty-Four Loans Fully Disbursed				656.9	
403	1965	Furnas - Centrais Eletricas Estreito I	Power	57.0	0.1
474	/1 1966	Furnas - Centrais Eletricas Estreito II	Power	39.0	0.7
565	1968	Furnas - Centrais Eletricas Porto Colombia	Power	22.3	0.6
566	1968	Centrais Eletricas de Minas Gerais - Volta Grande	Power	26.6	0.8
677	1970	Furnas - Centrais Eletricas Marimbondo	Power	80.0	5.8
728	1971	Centrais Eletricas do Sul do Brasil - Salto Osorio	Power	70.0	14.9
755	1971	Brazil	Education	8.4	4.4
756	1971	Brazil	Ports	45.0	34.6
757	1971	Superintendencia de Agua e Esgotos da Capital	Water Supply	22.0	12.6
758	1971	Companhia Metropolitana de Saneamento de Sao Paulo	Pollution Control	12.0	6.1
786	1971	Rede Ferroviaria Federal	Railways	46.0	5.2
797	1972	Companhia Siderurgica Nacional	Industry	64.5	7.4
812	1972	Usinas Siderurgicas de Minas Gerais	Industry	63.0	13.2
813	1972	Brazil	Roads	89.0	5.6
828	1972	Companhia Siderurgica Paulista	Industry	64.5	10.1
829	1972	Centrais Eletricas de Minas Gerais - Sao Simao	Power	60.0	17.3
853	1972	Brazil	Land Settl.	6.7	6.1

/1 In two tranches.

<u>Loan No.</u>	<u>Year</u>	<u>Borrower</u>	<u>Purpose</u>	<u>Amount Less Cancellations</u> (US\$ million)	<u>Undisbursed</u>
854	1972	Brazil	Roads	51.0	4.8
857	1972	Banco do Brasil	Grain Storage	23.7	6.4
868	1972	Brazil	Livestock	26.0	6.1
887	1973	LIGHT-Servicos de Eletricidade	Power	20.0	18.0
923	1973	Furnas Centrais Eletricas Itumbiara	Power	125.0	105.4
924	1973	Brazil	Agro-Indus.	54.0	40.9
1008	1974	Cia Hidro Eletricas do Sao Francisco-Paulo Afonso IV	Power	81.0	81.0
1009	1974	Banco Nacional de Habitacao	Water Supply	36.0	35.1
1067	1974	Brazil	Education	23.5	23.4
1074	1975	Rede Ferroviaria Federal	Railways	175.0	174.7
1075	1975	Brazil	Roads	110.0	104.7
1151	<u>/1</u> 1975	Companhia Siderurgica Nacional	Industry	95.0	95.0
1152	1975	Companhia Siderurgica Paulista	Industry	60.0	60.0
1153	1975	Brazil	Agriculture	23.0	23.0
1171	1975	FEPASA-Ferrovias Paulista	Railways	75.0	75.0
1195	<u>/1</u> 1976	State of Rio Grande do Norte	Rural Develop.	12.0	12.0
1206	<u>/1</u> 1976	Brazil	Develop. Bank	85.0	85.0
1207	<u>/1</u> 1976	Banco Nacional do Desenvolvimento Economico	Highways	<u>55.0</u>	<u>55.0</u>
		Total		2,563.1	<u>/2</u> 1,151.0
		Of which has been repaid to the Bank and others		<u>292.7</u>	
		Total now outstanding		2,270.4	
		Amount Sold	38.5		
		of which has been repaid	10.3	<u>28.2</u>	
		Total now held by Bank		2,242.2	
		Total undisbursed			1,151.0

/1 Not effective as of March 31, 1976.

/2 No IDA credits have been made to Brazil.

B. STATEMENT OF IFC INVESTMENTS (AS OF MARCH 31, 1976)

Year	Obligor	Type of Business	Amount in US\$ million		
			Loans	Equity	Total
1957	Siemens do Brasil Cia. de Eletricidade	Electrical Equipment	2.00	-	2.00
1958	Olinkraft, S.A. Celulose e Papel	Pulp and Paper	1.20	-	1.20
1958	D.L.R. Plasticos do Brasil, S.A.	Automotive Parts	0.45	-	0.45
1958	Willys-Overland do Brasil, S.A. Industria e Comercio	Motor Vehicles	2.45	-	2.45
1959	Companhia Mineira de Cimento Portland, S.A.	Cement	1.20	-	1.20
1959	Champion Celulose, S.A.	Pulp	4.00	-	4.00
1966/1968/ 1972	Acos Villares, S.A.	Steel	8.00	1.93	9.93
1966/1969	Papel e Celulose Catarinense, S.A.	Pulp and Paper	4.06	3.13	7.19
1967/1972	Ultrafertil, S.A. - Industria e Comercio de Fertilizantes	Fertilizers	8.22	3.03	11.25
1969	Petroquimica Uniao, S.A.	Petrochemicals	5.50	2.88	8.38
1970	Poliolefinas, S.A. Industria e Comercio	Petrochemicals	5.50	2.88	8.38
1971	Oxiteno, S.A. Industria e Comercio	Petrochemicals	4.60	1.44	6.04
1971	Industria de Celulose Borregaard, S.A.	Pulp	4.90	-	4.90
1972/1975	Companhia de Cimento Nacional de Minas	Cement	29.14	3.20	32.34
1973/1974	Companhia Siderurgica da Guanabara - COSIGUA	Steel	67.00	6.50	73.50
1973	Capital Market Development Fund - FUMCAP	Capital Market Development	5.00	-	5.00
1973	Empresa de Desenvolvimento de Recursos Minerais - CODENIN, S.A.	Nickel Mining and Refining	26.00	4.40	30.40
1974	Industrias Villares, S.A.	Elevators and Industrial Equipment	6.00	-	6.00
1974	Fabrica de Tecidos Tatuape, S.A.	Textiles	31.00	-	31.00
1975	Capuava Carbonos Industriais Ltd.	Carbon Black	6.18	1.08	7.26
1975	Oxiteno Nordeste, S.A.	Petrochemicals	10.00	-	10.00
	Total Gross Commitments		232.40	30.47	262.87
	Less Cancellations, Terminations, Repayments and Sales		171.84	8.09	179.93
	Total Commitments Now Held by IFC		60.56	22.38	82.94
	Total Undisbursed		17.68	0.80	18.48

C. PROJECTS IN EXECUTION <sup>1/</sup>  
(As of March 31, 1976)

There are now 31 effective Bank loans under disbursement:

Loan No.

- 403/474 Estreito Hydroelectric Project: US\$57 and US\$39 million loans of February 26, 1965 and December 19, 1966; Effective Dates: July 8, 1965 and June 1, 1967; Closing Date: December 31, 1976. The project is completed and the loan is almost fully disbursed. Equipment costs were substantially below estimates. The original Closing Date was April 1, 1971.
- 565 Porto Colombia Hydroelectric Project: US\$22.3 million loan of October 23, 1968; Effective Date: February 18, 1969; Closing Date: December 31, 1975. Changes in the project layout and design have increased substantially the local cost, which will be covered by ELETROBRAS, without, however, significantly affecting the economic justification for the project. Construction work is completed. The Closing Date of the project was postponed from March 31, 1975, the original date, to December 31, 1975, to allow for disbursement of retention payments.
- 566 Volta Grande Hydroelectric Project: US\$26.6 million loan of October 23, 1968; Effective Date: February 27, 1969; Closing Date: June 30, 1976. The project was delayed six months by spillway foundation difficulties but progress has since been satisfactory. The project was completed in September 1975 with a cost overrun of US\$138 million due to foundation problems and cost increases in equipment. However, the resulting unit cost of generating capacity is still attractive. The Closing Date of the Loan was postponed a second time to June 30, 1976, to permit payments to continue on several purchases already placed. The original Closing Date was January 31, 1975.

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<sup>1/</sup> These notes are designed to inform the Executive Directors regarding the progress of projects in execution, and in particular to report any problems which are being encountered, and the action being taken to remedy them. They should be read in this sense, and with the understanding that they do not purport to present a balanced evaluation of strengths and weaknesses in project execution.

Loan No.

- 677 Marimbondo Hydroelectric Project: US\$80 million loan of May 25, 1970; Effective Date: September 29, 1970; Closing Date: May 31, 1977. Construction work is proceeding on schedule. The cost of the project has increased by US\$42 million, or 15% over the original estimate, because of increased excavation and concrete work, resulting from poor rock foundation, and increased equipment prices. This has not significantly affected the economic justification of the project.
- 728 Salto Osorio Hydroelectric Project: US\$70 million loan of April 5, 1971; Effective Date: July 19, 1971; Closing Date: May 31, 1977. The construction of the Salto Osorio hydroelectric plant is progressing satisfactorily and the first two of the planned four generating units are now in commercial operation. A cost overrun of about US\$127 million, due to increased equipment and construction costs, is foreseen, but this does not significantly affect the economic justification of the project. The cost overrun is being financed by loans from ELETROBRAS and a commercial bank. The construction of the transmission system, delayed to allow required modifications, is proceeding satisfactorily.
- 755 Education Project: US\$8.4 million loan of June 21, 1971; Effective Date: October 28, 1971; Closing Date: December 31, 1977. Progress on the construction and equipping of the project schools is now proceeding satisfactorily. However, the project implementation is behind the original schedule due to initial delays in establishing and staffing the project unit and because of subsequent changes in project content. The original Closing Date was December 31, 1975.
- 756 Santos Port Project: US\$45 million loan of June 21, 1971; Effective Date: October 29, 1971; Closing Date: June 30, 1979. Execution of the project is now proceeding satisfactorily, although there have been further delays and cost overruns which will be financed by the Borrower. The Government has approved legislation which converted DNPVN from a government agency to a public corporation, PORTOBRAS. PORTOBRAS, with the assistance of management consultants, has been improving port operations in Santos. The National Port Development Study financed under the project is now completed.
- 757 Sao Paulo Water Supply Project: US\$22 million loan of June 21, 1971; Effective Date: January 13, 1972; Closing Date: June 30, 1976. The project suffered initial delays caused by the State of Sao Paulo not furnishing the required counterpart funds, which are now included in the state budget. The Government has consolidated all the water and sewerage companies in the state into a single company, SABESP, and a loan assumption agreement with the new company was concluded on December 18, 1974. Progress of the project is expected to improve with new management of the company which took office recently. The original Closing Date was June 30, 1975.

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- 758 Sao Paulo Pollution Control Project: US\$15 million loan of June 21, 1971; Effective Date: January 13, 1972; Closing Date: June 30, 1976. A review of the original design resulted in its modification to exclude the discharge of raw sewage and a related treatment facility. As a result of the modifications in the project, the loan amount was reduced to US\$12 million. The Government has consolidated all the water and sewerage companies in the State into a single company, SABESP, and a loan assumption agreement with the new company was concluded December 18, 1974. Progress of the project is expected to improve with new management which took office recently. The original Closing Date was June 30, 1975.
- 786 Railway Project - MBR: US\$46 million loan of August 25, 1971; Effective Date: February 4, 1972; Closing Date: March 31, 1978. The project is now completed, except for the construction and equipping of the Borrower's main workshop at Jaceaba. The purchase of equipment for this workshop was delayed because of a change in the location of the workshop resulting from the Government's decision to build a new railway line between the cities of Belo Horizonte and Volta Redonda. To allow additional time required for the purchase of this equipment, the Closing Date, originally September 30, 1975, was postponed to March 31, 1978.
- 797 CSN Steel Expansion Project, Stage II: US\$64.5 million loan of February 8, 1972; Effective Date: August 31, 1972; Closing Date: July 1, 1976. The latest cost estimate is US\$653 million, an increase of about 65% over the appraisal estimate due to design evolution, unforeseen site works and increases in local construction costs. This cost increase will not significantly affect the economic justification of the project. The project is now 75% complete and is about ten months behind the appraisal schedule.
- 812 USIMINAS Steel Expansion Project, Stage II: US\$63 million loan of April 11, 1972; Effective Date: July 28, 1972; Closing Date: June 1, 1977. The latest cost estimate is US\$952 million, an increase of about 67% from the appraisal estimate due primarily to design evolution and increases in local construction costs. This cost increase will not significantly affect the economic justification of the project. The project is 80% complete and is about nine months behind the original schedule. Implementation of Stage III, which is not being financed by the Bank, is well underway. The original Closing Date was June 1, 1976.
- 813 Third Highway Construction Project: US\$89 million loan of April 11, 1972; Effective Date: December 4, 1972; Closing Date: June 30, 1976. Construction works are more than 98% completed but are slightly behind schedule; the estimated total contract cost is about 2% above the appraisal estimate. The feasibility studies and detailed engineering financed under the loan were

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started later than planned, but are now completed at a cost substantially below the appraisal estimate. Disbursements are lagging behind the appraisal forecast, but have improved during the past year.

- 828 COSIPA Steel Expansion Project, Stage II: US\$64.5 million loan of June 14, 1972; Effective Date: October 5, 1972; Closing Date: January 15, 1977. The latest cost estimate is US\$733 million, an increase of about 55% over the appraisal estimate due primarily to increased local construction costs. This will not significantly affect the economic justification of the project. The project is now 70% complete and is about nine months behind the original schedule.
- 829 Sao Simao Hydroelectric Project: US\$60 million loan of June 14, 1972; Effective Date: September 20, 1972; Closing Date: September 30, 1979. Construction of the project is proceeding according to schedule. An anticipated 50% cost overrun is being covered by local and foreign borrowing.
- 853 Alto Turi Land Settlement Project: US\$6.7 million loan of July 24, 1972; Effective Date: February 15, 1973; Closing Date: December 1, 1978. COLONE has prepared revised farm development plans whose credit component, to be financed by public financial institutions, will be significantly higher than originally estimated, although still low in comparison to other settlement projects. Administrative delays in the release of public funds for farm credit and COLONE working capital requirements and difficulties in recruiting project staff delayed the start of project execution. Settlement, however, has now begun and the project should be completed in 1978 as envisaged.
- 854 Fourth Highway Construction Project: US\$51 million loan of August 4, 1972; Effective Date: March 21, 1973; Closing Date: December 31, 1976. Construction is more than 75% completed but behind schedule. However, disbursement is expected to be completed by the Closing Date. The estimated total contract cost is 11% above the appraisal estimate.
- 857 Grain Storage Project: US\$30 million loan of September 27, 1972; Effective Date: January 16, 1973; Closing Date: December 31, 1979. After some initial difficulties with the appraisal of subprojects, the project had been progressing satisfactorily. However, in April 1975 the Government adopted a national grain storage financing program involving subsidized interest rates. Therefore, on October 28, 1975, the Bank and the Borrower agreed to cancel the uncommitted balance (about 20%) of the loan. Disbursement of the loan is proceeding as scheduled.

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- 868 Interim Second Livestock Project: US\$26 million loan of December 19, 1972; Effective Date: May 24, 1973; Closing Date: June 30, 1977. The project is proceeding normally. The loan has been fully committed and is expected to be disbursed as scheduled.
- 887 Power Distribution Project: US\$20 million loan of April 16, 1973; Effective Date: July 31, 1973; Closing Date: June 30, 1976. Principally due to difficulties encountered in preparing bidding documents and delays in deliveries of equipment and materials, the project is about two years behind schedule. Complete delivery and installation of equipment and materials to be financed by the loan will probably take until July 1977 and a postponement of the Closing Date will be required.
- 923 Itumbiara Hydroelectric Project: US\$125 million loan of August 1, 1973; Effective Date: October 30, 1973; Closing Date: December 31, 1982. Contracts for penstocks, turbines, and concrete and earth works have been awarded. Commissioning of the first generating unit is scheduled for March 1980, four months behind original schedule due to delay in awarding of the civil works contracts.
- 924 Agro-Industries Credit Project: US\$54 million loan of August 1, 1973; Effective Date: March 11, 1974; Closing Date: December 31, 1978. The Central Bank expects to complete commitment of project funds by mid-1976.
- 1008 Paulo Afonso IV Hydroelectric Power Project: US\$81 million loan of June 17, 1974; Effective Date: April 15, 1975; Closing Date: December 31, 1978. A Bank mission recently reviewed the progress of the preparation and implementation of plans for resettlement of the 9,700 families to be displaced by the Sobradinho reservoir. Execution of these plans is underway, and construction of new towns to house the urban portion of the population has begun. The rural population is being offered the opportunity of resettlement in a promising new agricultural area in the Corrente River region in the western part of the State of Bahia. Those who prefer to remain near their present houses will be resettled in new villages on the edge of the future reservoir. The construction of the underground power station and Sobradinho Dam is proceeding on schedule.
- 1009 Minas Gerais Water Supply Project: US\$36 million loan of June 17, 1974; Effective Date: January 9, 1975; Closing Date: August 15, 1977. The State Water Supply Company changed its name from Companhia Mineira de Agua e Esgotos (COMAG) to Companhia de Saneamento de Minas Gerais (COPASA-MG). The project is progressing on schedule and the loan has been fully committed.

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- 1067 Second Education Project: US\$23.5 million loan of December 27, 1974; Effective Date: April 17, 1975; Closing Date: December 31, 1979. Project execution has started reasonably well, and is expected to be completed by the target date. Project implementation units have been established in all eight project states and these, together with the main project unit, PREMEN, are working well. The pre-investment studies in the Northeast, financed under the loan, are underway and are expected to yield useful information for future sector investment planning.
- 1074 Second Railway Project: US\$175 million loan of January 17, 1975; Effective Date: June 17, 1975; Closing Date: December 31, 1979. Project execution is progressing reasonably well and appropriate steps are being taken to strengthen project management and control. Cost estimates for the Investment Plan, of which the project is a part, have increased substantially on several items. The Borrower is therefore preparing a revised Plan in which items with low priority will be postponed or scaled-down. This revision is not expected to affect the project items. Tendering for Bank-financed items is on schedule.
- 1075 Fifth Highway Project: US\$110 million loan of January 17, 1975; Effective Date: May 15, 1975; Closing Date: December 31, 1979. Project execution is proceeding satisfactorily. Contracts for civil works for all 21 lots have now been awarded and construction works are proceeding according to schedule. Implementation of the road maintenance component of the project is slightly delayed due to protracted negotiations for the hiring of consultants.
- 1152 COSIPA Steel Expansion Project - Stage III: US\$60.0 million loan of August 4, 1975; Effective Date: March 4, 1976; Closing Date: June 30, 1980. Project is proceeding according to schedule. Bidding for equipment is underway.
- 1153 Lower Sao Francisco Polders Project: US\$23.0 million loan of August 4, 1975; Effective Date: November 25, 1975; Closing Date: December 31, 1979. Construction of dikes and the irrigation and drainage system for the Betume varzea has begun. Bidding for most of the other civil works and equipment procurement is underway. Preliminary estimates, prior to bid evaluation, are that project costs might increase considerably over the appraisal estimate due to partial design changes and more rapid than expected increases in equipment and construction prices and in costs of land expropriation. The emergency works

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remain the least cost way to offset the effects on the project area population of the hydroelectric developments upstream. Nevertheless, further possible modifications in the design of emergency and irrigation works are being studied by CODEVASF and its consultants with a view to limiting cost increases.

1171 Third Railway Project (FEPASA): US\$75.0 million loan of November 12, 1975; Effective Date: March 24, 1976; Closing Date: June 30, 1979.  
Project execution is proceeding satisfactorily.

BRAZIL - FERTILIZER PROJECT

Loan and Project Summary

Borrower: Petrobras Fertilizantes, S.A.  
Guarantor: Federative Republic of Brazil.  
Amount: US\$50 million equivalent.  
Terms: Payable in 15 years, including 4½ years of grace, at 8½% interest per annum. Guarantee fee of 1½% payable to Brazil.

Project Description: The project consists of the construction of an ammonia plant at Araucaria, Parana, with a manufacturing capacity of about 1,200 metric tons per day, including an air separation plant and facilities to store about 5,000 metric tons of ammonia; an adjacent plant to manufacture urea, with a capacity of about 1,500 metric tons per day, including facilities to store about 30,000 metric tons of bulk and bagged urea; a sulfur recovery unit with a capacity of about 58 metric tons per day; and related ancillary facilities. The project also includes construction and equipment of the necessary laboratories, offices and maintenance shops.

<u>Estimated Cost:</u>	US\$ million			
	<u>Foreign</u>	<u>Local</u>	<u>Total</u>	<u>%</u>
Equipment and Materials	74.8	44.8	119.6	62
Engineering and Licenses	9.8	6.1	15.9	8
Land and Civil Works	2.2	13.9	16.1	9
Erection, Supervision and Pre-Operating Costs	<u>7.9</u>	<u>32.8</u>	<u>40.7</u>	<u>21</u>
Base Cost Estimates	94.7	97.6	192.3	100
Physical Contingencies (10.5%)	8.0	8.2	16.2	
Price Escalation (14%)	<u>12.5</u>	<u>13.8</u>	<u>26.3</u>	
Installed Cost	115.2	119.6	234.8	
Working Capital	6.5	6.9	13.4	
Interest During Construction	<u>18.3</u>	<u>5.4</u>	<u>23.7</u>	
Financing Required	140.0	131.9	271.9	

Financing Plan:

	<u>US\$ Million</u>
IBRD	50.0
BNDE	55.0
Suppliers' Credits	35.0
Foreign Private Lenders	20.0
Equity Contribution from PETROBRAS	<u>111.9</u>
	<u>271.9</u>

Estimated  
Disbursements:

	US\$ million by calendar year				
	<u>1976</u>	<u>1977</u>	<u>1978</u>	<u>1979</u>	<u>1980</u>
Annually	10.0	15.0	20.0	4.0	1.0
Cumulative	10.0	25.0	45.0	49.0	50.0

Procurement  
Arrangements:

For goods to be financed under the proposed loan, procurement would follow Bank guidelines. The proceeds of the Bank loan would finance expenditures for: (a) equipment and materials procured through international competitive bidding (US\$26.0 million); (b) imported items and packages costing US\$100,000 or less procured through international shopping (US\$3.4 million); (c) proprietary, limited or long delivery items critical to the timely completion of the project, also procured through international shopping (US\$7.0 million); (d) foreign licenses, engineering and supervision services (US\$11.6 million); and (e) local engineering services (US\$2.0 million).

Technical  
Assistance:

PETROBRAS has engaged engineering consultants (Uhde and Lurgi of the Federal Republic of Germany) to provide basic engineering. Detailed engineering will be provided by NATRON, a Brazilian firm. The estimated cost of engineering and supervision services range from US\$3,800 to US\$4,500 per man/month of local personnel and from US\$5,500 to US\$8,000 for man/month of foreign personnel (in end of 1975 wage levels), exclusive of travel and subsistence allowance.

Rate of Return:

The estimated economic rate of return is 24%.

Completion Date:

Project completion expected July 1, 1979.

Staff Project  
Report:

Report No. 1050-BR dated April 23, 1976.

BRAZIL  
FERTILIZER PROJECT

Supplementary Project Data Sheet

Section I: Timetable of Key Events

- (a) Time Taken by Country to Prepare the Project: Approximately six months (from March 1975 to September 1975).
- (b) Project prepared by: The Engineering Department of PETROBRAS with assistance of the engineering firms Uhde and Lurgi of the Federal Republic of Germany.
- (c) First Presentation to the Bank: May 1975  
First Bank mission to consider the project: June 1975
- (d) Departure of Appraisal Mission: September 23, 1975
- (e) Completion of Negotiations: April 9, 1976
- (f) Planned Date of Effectiveness: August 18, 1976

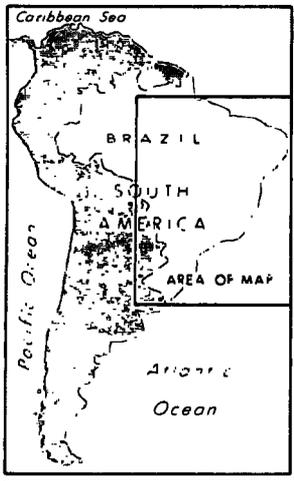
Section II: Special Bank Implementation Actions

None

Section III: Special Conditions

- (i) The Borrower shall at all times after the completion of the Project maintain a debt/equity ratio of 60:40 or better and a current ratio of not less than 1.2:1 (para. 47).
- (ii) The Borrower shall not pay dividends (other than dividends for preferred shares), prepay any loan or make any cash distribution if after such payments the current ratio would be smaller than 1.5:1 (para. 47).
- (iii) The Borrower will not incur any debt if after the incurrence thereof its projected debt service coverage ratio would fall below 1.5:1 (para. 47).
- (iv) The Borrower shall enter into an agreement with PETROBRAS regarding the supply and pricing of feedstock and of the utilities from the PETROBRAS refinery (para. 36).

- (v) PETROBRAS shall provide sufficient funds to the Borrower as required to enable the Borrower to carry out the Project and to obtain on the date of Project completion a debt/equity ratio not greater than 60:40 and a current ratio not lower than 1.2:1 (para. 43).
- (vi) PETROBRAS shall refinance any repayment of principal of any credit or loans that would become payable by the Borrower before the completion of the Project (para. 41).
- (vii) The Government shall carry out or cause to be carried out a study of projected supply and demand for fertilizers in Brazil and of the requirements for further investments in facilities for manufacturing, mixing, storing, transportation and marketing of fertilizers and shall propose a mechanism to update the forecast of supply and demand and related data periodically. The Government shall exchange views with the Bank on the results and recommendations of the fertilizer study, on the Government's fertilizer import and pricing policies and its plans for the expansion and development of the fertilizer industry (para. 29).
- (viii) The Government will not take any action with regard to the price of ammonia, urea, and feedstock that may prevent BRASFERTIL, operating efficiently, from covering its costs, servicing its debts, and earning a reasonable return on its invested capital (para. 50).



# BRAZIL MAJOR FERTILIZER PLANTS

- |                    |                          |           |
|--------------------|--------------------------|-----------|
|                    | NITROGEN                 | PHOSPHATE |
| PROPOSED           | ▲                        | ■         |
| UNDER CONSTRUCTION | △                        | □         |
| OPERATING          | ▲                        | ■         |
| —                  | RAILROADS                |           |
| - - -              | INTERNATIONAL BOUNDARIES |           |

The boundaries shown on this map do not imply endorsement or acceptance by the World Bank and its affiliates.

