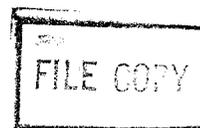


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Report No. P-3391-CHA

REPORT AND RECOMMENDATION
OF THE
PRESIDENT OF THE
INTERNATIONAL DEVELOPMENT ASSOCIATION
TO THE EXECUTIVE DIRECTORS
ON A
PROPOSED CREDIT
IN AN AMOUNT EQUIVALENT TO \$75.4 MILLION
TO THE
PEOPLE'S REPUBLIC OF CHINA
FOR AN
AGRICULTURAL EDUCATION AND RESEARCH PROJECT

October 14, 1982

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CURRENCY EQUIVALENTS

Currency in Renminbi
\$1.0 = Yuan (Y) 1.75
Y 1.00 = \$0.571

ABBREVIATIONS

CAAS	-	Chinese Academy of Agricultural Sciences
CAS	-	Chinese Academy of Sciences
CAST	-	Chinese Association for Science and Technology
CNTIC	-	China National Technical Import Corporation
MOA	-	Ministry of Agriculture
MOE	-	Ministry of Education
NRRI	-	National Rice Research Institute
PC	-	Project Commission
PO	-	Project Office
SAC	-	State Agricultural Commission
SSTC	-	State Science and Technology Commission

GOVERNMENT OF THE PEOPLE'S REPUBLIC OF CHINA
FISCAL YEAR

January 1 - December 31

ACADEMIC YEAR

September 1 - August 31

CHINA

AGRICULTURAL EDUCATION AND RESEARCH PROJECT

Credit and Project Summary

Borrower: The People's Republic of China

Amount: SDR 67.8 million (\$75.4 million equivalent)

Terms: Standard

Project Description: In support of the Government's program of strengthening higher education and research in the agricultural sciences, the project will provide assistance to 11 leading agricultural colleges, 6 existing research institutes, and a new National Rice Research Institute (NRRI). The project will finance civil works, furniture, equipment, specialist services, fellowships, and other related inputs to: (a) raise the quality of graduates and research work in the agricultural sciences; (b) expand both undergraduate and postgraduate enrollment and research capacity in these fields; and (c) strengthen the organization and management of resources in agricultural education and research. Project risks grow out of the Bank's limited knowledge of China's agricultural research system, the dimensions of China's manpower pool in agriculture, and the presently changing system of agricultural education. The studies of China's agricultural manpower and agricultural research system to be conducted under the project will contribute to reducing these risks and will enable the Government to improve the effectiveness of future projects in agriculture.

<u>Estimated Cost:</u>	<u>Local</u> -----	<u>Foreign</u> (\$ million)	<u>Total</u> -----
<u>I. Improvement of Teaching and Research</u>			
<u>Quality</u>			
(a) Fellowships and academic study tours	1.5	13.4	14.9
(b) Specialist services			
Academic	-	1.2	1.2
Language training	1.7	1.8	3.5
(c) Equipment	26.3	45.3	71.6
Subtotal	<u>29.5</u>	<u>61.7</u>	<u>91.2</u>
<u>II. Expansion of Enrollment and Research</u>			
<u>Capacity</u>			
(a) Furniture	2.5	-	2.5
(b) Construction and remodeling	71.2	-	71.2
Subtotal	<u>73.7</u>	-	<u>73.7</u>
<u>III. Management of Institutional Resources</u>			
<u>and Project Support</u>			
(a) Management study tours	-	0.8	0.8
(b) Specialist services - management	-	0.5	0.5
(c) Management expenses	1.7	-	1.7
Subtotal	<u>1.7</u>	<u>1.3</u>	<u>3.0</u>
<u>IV. Studies and Preparation of Future Projects</u>			
Subtotal	<u>1.7</u>	<u>1.0</u>	<u>2.7</u>
Baseline Cost	<u>106.6</u>	<u>64.0</u>	<u>170.6</u>
<u>V. Contingencies</u>			
Physical	5.3	3.2	8.5
Price	14.3	8.2	22.5
Total Project Cost	<u>126.2</u>	<u>75.4</u>	<u>201.6</u>
 <u>Financing Plan:</u>			
	<u>Local</u> -----	<u>Foreign</u> (\$ million)	<u>Total</u> -----
IDA	-	75.4	75.4
Government	126.2	-	126.2
Total	<u>126.2</u>	<u>75.4</u>	<u>201.6</u>

<u>Estimated</u> <u>Disbursements:</u>	<u>Bank FY</u>	<u>1983</u>	<u>1984</u>	<u>1985</u>	<u>1986</u>	<u>1987</u>	<u>1988</u>
	Annual	3.7	11.3	18.9	15.1	15.1	11.3
	Cumulative	3.7	15.0	33.9	49.0	64.1	75.4

ERR: NA

Staff Appraisal Report: No. 3819c-CHA, dated October 14, 1982



REPORT AND RECOMMENDATION OF THE PRESIDENT
OF THE INTERNATIONAL DEVELOPMENT ASSOCIATION
TO THE EXECUTIVE DIRECTORS
ON A PROPOSED CREDIT
TO THE PEOPLE'S REPUBLIC OF CHINA
FOR AN AGRICULTURAL EDUCATION AND RESEARCH PROJECT

1. I submit the following report and recommendation on a proposed credit to the People's Republic of China to help finance an Agricultural Education and Research Project. The credit, for SDR 67.8 million (\$75.4 million equivalent), would be on standard IDA terms.

PART I - THE ECONOMY

2. An introductory economic report, entitled "China: Socialist Economic Development" (No. 3391-CHA), was distributed to the Executive Directors on June 1, 1981. A Country Economic Memorandum, which updates the report, particularly on developments over the past two years, is under preparation. Country data are given in Annex I.

Development Objectives and Performance

3. China's economic system combines an urban state economy modelled after that of Eastern European countries, with a rural commune economy based on the country's own traditions as well as its socialist ideology. The state economy is characterized by public ownership, centralization of economic decisions, strictly hierarchical control, and relatively little reliance on markets or prices. In the commune economy, land and most capital are owned collectively by production teams of 30-40 households, which generally correspond to traditional villages (or neighborhoods of larger villages). Each team is part of a brigade, each brigade part of a commune: these higher level units organize land improvement projects, run industrial and other enterprises, and deliver education and health services. In both the urban and rural economy, extensive reform of the economic management system, aimed mainly at improving economic efficiency, has been instituted in the last few years (paras. 14-15).

4. Development efforts over the past three decades have consistently been directed toward two main objectives: first, industrialization, and in particular development of a heavy industrial base; second, elimination of the worst aspects of poverty. Chinese development strategy has also been shaped by two major constraints: first, an extreme shortage of cultivable land in relation to population; second, a high degree of international isolation.

5. These two constraints have sharpened the conflict between the two objectives. The prospective returns to investment in agriculture (the principal source of income for the poor) have been limited by land scarcity and by the fact that the easiest advances in intensive cultivation had already been made. Similarly the inevitable competition for capital and skilled manpower between industrialization and other means of poverty reduction was for a long period aggravated by reliance entirely on domestic resources and technology.

6. The Chinese response to this dilemma has been to approach the two objectives in two different ways. Following an initial phase of institutional change and property redistribution, poverty reduction - mainly through rural development and the provision of basic health and education services - has been based largely on local resources and initiative. Industrialization, by contrast, has been based mainly on a massive infusion of centrally mobilized resources, with little concern for cost effectiveness, and using largely Soviet technology of the 1950s.

7. Tension between these two approaches has contributed to sharp policy oscillations, as has a continuing debate on the role of political criteria in economic decisions and on the most appropriate degree of centralization. The country is only now recovering from the latest political upheavals - the Cultural Revolution (1966-76) - during which extreme leftist views often predominated, and egalitarianism and ideology were emphasized at the expense of economic efficiency.

8. Notwithstanding these policy swings, which have engendered some dramatic economic fluctuations, there has been substantial progress toward the two main objectives. Industrialization has been very rapid, largely as the result of an unusually high rate of investment, virtually all of which has been financed by domestic savings. The share of industry in GDP (around 44%) is currently similar to the average for middle-income developing countries. However, agriculture still accounts for 35% of GDP and over 70% of employment - similar to the average for low-income developing countries. Around 85% of the population still lives in rural areas.

9. Over the whole period 1949-81 the population expanded at a little under 2% a year. Despite the tightly constrained agricultural sector, rapid expansion of industrial output has caused national income per person to grow fairly fast. With adjustments for international comparability, per capita GNP appears to have grown at an annual rate of 2.0-2.5% in 1957-77 and (because of a spurt in recent years) 2.5-3.0% in 1957-81. Even the former rate is significantly above the average for other low-income developing countries (1.6% in 1960-78) - though the latter is still well below the average for middle-income developing countries (3.7%) and has not been high enough to pull China out of the low-income group.

Strengths and Weaknesses

10. China has clearly displayed an outstanding capacity to mobilize domestic resources - material, human and financial - in pursuit of comparatively well-defined national objectives. Given the shortage of land and initially high yields, agricultural growth since 1949 has been quite impressive. Yields of the major crops are now among the highest in the world though labor productivity remains low. Agricultural growth, at about 3% a year, has, however, been eclipsed by industrial growth at an average rate of more than 10% per year. Although a large minority of the population (around 200 million people) remains very poor, low income groups in China have been made better off in terms of employment, nutrition, health and basic education than their counterparts in most other poor countries. Partly as a result, but also through an intensive political campaign in the 1970s, the population growth

rate has been reduced in recent years to a remarkably low level (1.4% in 1981). Life expectancy - whose dependence on many other economic and social variables makes it probably the best single indicator of human welfare in a country - is (at 64 years) outstandingly high for a country at China's per capita income level.

11. The outstanding weakness of China's economy is inefficiency - in converting inputs into outputs, in matching supply with demand, and in investment decision making. This is partly the result of technological backwardness, caused by two decades of international isolation. But it also reflects the virtual absence of medium-term planning from 1958 until recently, the lack of economic criteria in investment analysis, and serious weaknesses in the economic system - in particular, inadequate contact between producers and users, insufficient use of markets and price incentives, inadequate linkage between effort and rewards, and an overstaffed and cumbersome bureaucracy.

Recent Developments

12. Since 1977 there has been intense discussion within China concerning both the ends and the means of economic development. Though partly the result of political change, the debate has been fuelled by some important underlying economic considerations. Future growth will inevitably have to depend mainly on improving the efficiency of resource use. The benefits of technological isolation as a stimulus to improvisation have been overtaken by its costs in terms of backwardness and bottlenecks. And the remarkable progress made in industrialization and in meeting basic needs has not been matched by - and has created a demand for - a commensurately rapid rise in general living standards.

Reform and Adjustment

13. In 1979, the Government initiated a program of reform and adjustment. Economic reform is aimed at improving the overall efficiency of the economic system. It involves: restoring and improving the quality of central planning and policy coordination; devolving more decision-making authority to lower level units in the economic system; establishing more direct links between incomes and the performance of economic units and individuals; and placing more reliance on market mechanisms and economic instruments, less on administrative directives, to influence economic activity. Structural adjustment is aimed at speeding improvements in living standards and involves readjusting the relative shares of consumption and investment in national income, some sectoral and subsectoral readjustments, and more emphasis on foreign trade.

14. Economic reforms have affected planning and management at both the central and local government levels. A major reorganization of the central government has strengthened the core planning and management agencies (especially the State Planning Commission and the State Economic Commission)

and reduced the total number of commissions, ministries and agencies under the State Council from 98 to 52. Central-local government relations have been affected by a decentralization of fiscal and foreign trade management, and the legal rights and obligations of economic agents have been better defined.

15. Other reforms have affected the management and organization of the state enterprise and collective sectors. Management of state enterprises has been affected by changes and experiments aimed at improving incentives, including the introduction of profit retention schemes and more flexible payment and employment practices. There has also been experimentation with different types of state enterprise organization, a greater variety of marketing channels, some price flexibility, and greater autonomy for state enterprises in production decisions. In rural areas, more responsibility has been given to lower level collective units and to households, and incomes have been more directly linked to the output of groups and households. There has been an increase in the number and types of rural markets at which households can freely trade commodities. In urban areas the scope for collective and individual economic activities has been expanded. Some of these reforms - especially those in rural areas - have already improved economic efficiency, while others will take longer to have an impact.

16. Progress in structural adjustment has been impressive. The share of investment in net material product (NMP) has declined from 37% in 1978 to 30% in 1981, and the share of agriculture in NMP has increased from 36% in 1978 to 40% in 1981. Emphasis on light industry, which accounted for 43% of industrial output value in 1978, was needed to provide more consumer goods to match higher incomes. The shift in emphasis from heavy to light industry, which began in 1979 and has become even more dramatic in the past two years, has led to a sharp increase in this proportion - reaching over 51% in 1981. In fact, in 1981, heavy industry output actually fell by 4.7% while light industry output grew by 14.1%.

Stabilization Program

17. The implementation of adjustment and reform policies in recent years was accompanied by some macroeconomic instability in 1979 and 1980: there were large budget deficits, moderate inflation, rapid growth in the money supply, and a widening of the current account deficit from \$0.7 billion in 1978 to \$2.4 billion in 1980. Except for the budget deficit (5.1% of NMP in 1979 and 3.5% in 1980), the symptoms of instability were quite mild by international standards. They were, however, taken very seriously in a country accustomed to insignificant inflation rates during the last two decades. Accordingly, in 1981, the Government introduced a stabilization program, which included a moderation of currency and credit expansion, restoration of budgetary balance and sharp cuts in investment.

18. Monetary and Fiscal Policy. Restoration of price stability, the Government's major concern, has been largely achieved: retail prices increased by only 2.4% in 1981 compared with 6.0% in 1980. In rural areas shortages of consumer goods and repressed inflation remain, but in urban areas measures to restrict increases in nominal incomes in 1981 improved the demand-supply situation. Meanwhile the major changes in relative prices between urban and rural areas and within sectors continued through 1981. Some price flexibility has also been introduced: above-plan output can be sold at prices negotiated directly between buyers and sellers, and there is considerable downward price flexibility for goods in excess supply.

19. Strict price controls were one element of the stabilization program but fiscal policy has also played an important role. The Government reduced the budget deficit significantly in both 1980 and 1981, primarily through major cuts in capital construction: after rising by over 50% in 1978 and nearly 14% in 1979, budget expenditures on capital construction were reduced by 19% in 1980 and 22% in 1981. Moreover, the mode of deficit financing in 1981 was less inflationary than in previous years. Because of the Government's concern about open inflation, many of the increases in agricultural procurement prices have not been passed on to urban consumers but instead were financed by rapidly increasing subsidies (Y 8 billion in 1978 and Y 36 billion in 1981). Total domestic revenues have continued to increase but not as rapidly as NMP, due in part to the introduction of profit retention schemes and the shift in the composition of industrial output from heavy to light industry. On the other hand, extrabudgetary funds of enterprises and administrative organizations have grown rapidly and were about half as large as budgetary revenues in 1981.

20. Innovations like credit financing of investment and profit retention schemes mean that monetary policy potentially has a more important role to play in China. After rapid increases in 1979 and 1980, the growth rate of the money supply was reduced in 1981 as a result of strict control over currency expansion. The velocity of circulation of money fell in 1979-81, but this was to be expected during a time of major institutional and structural changes, including the increased monetization of rural economic activities and the proliferation of collective and individual commercial and service undertakings. Bank branches have been given more autonomy to mobilize and allocate resources, and efforts have been made to influence economic decision making at the micro level by increasing and rationalizing interest rates.

21. Balance of Payments. The Government's current policy includes continued emphasis on foreign trade and on making more use of imported technology. The performance of merchandise exports has continued to be very impressive, with the real growth rate averaging about 20% p.a. during

1978-81, due mainly to rapid growth in manufactured exports. However, merchandise imports, which also grew rapidly in 1979 and 1980, fell by 4.5% in value and 8.6% in volume in 1981 due to the stabilization program, especially the sharp cutback in the investment program. As a result, the \$2.4 billion deficit of 1980 was converted into a \$2.0 billion current account surplus in 1981.

22. The strong export performance is due in part to institutional and policy changes. In January 1981, an internal settlement rate of Y 2.8 per US dollar (the official exchange rate was Y 1.6 per US dollar) was introduced for all trade. The central government has actively encouraged decentralization of foreign trade decision making and has introduced material incentives, primarily in the form of foreign exchange retention schemes. It appears, however, that some provinces and organizations may have striven to increase exports even if this meant undercutting exports of other provinces or units or exacerbating domestic supply shortages; greater access to foreign exchange has also stimulated a faster growth of imports than would have been permitted under a more centralized system. In the absence of price and other reforms the Government has felt obliged to deal with these problems by introducing export quotas for 78 commodities, levying export duties on other commodities, restricting some consumer goods imports, and raising import tariffs on others.

23. The Government's approach to foreign borrowing has remained very cautious. In 1980 and 1981 it cut back sharply on interbank borrowing and in 1981 took advantage of the unexpectedly strong current account position to repay commercial bank and other loans. In 1981, China's debt service ratio was 7.8%. Gross international reserves at the end of 1981 were sufficient to cover about five months of 1981 imports of goods and services.

24. Investment. In 1978, China's rate of investment was much higher than the average for other low-income or middle-income countries; moreover, the overall efficiency of investment was low and getting worse due to shortages of necessary materials and supplies, major transport constraints, and inappropriate and inefficient procedures for selecting and implementing investment projects. In these circumstances, the Government decided to cut back on the investment rate while introducing measures to improve investment efficiency and thereby protect future growth potential. The reduction in the investment rate has been achieved in spite of difficulties in cutting many investment components: the share of inventory accumulation in total investment has remained high; investment financed from retained earnings or local resources has grown sharply as a proportion of the total; and there has been rapid growth of nonproductive, particularly housing, investment. As a result, most of the cutbacks have had to be in large centrally financed projects, which will probably have an adverse effect on future growth.

Growth and Income Developments

25. The overall rate of economic growth in recent years has been impressive, averaging 5.6% p.a. between 1978 and 1981 - a much higher rate than in the first half of the 1970s. In 1981, however, the rate dropped to 3.0% as a result of the stabilization program.

26. The combination of structural adjustment, economic growth and a low population growth rate (1.3% p.a. between 1978 and 1981) has led to rapid increases in the general standard of living in recent years. In urban areas, general wage increases and higher bonuses have more than offset the increase in the cost of living index, and real per capita incomes increased by 4.9% p.a. between 1978 and 1981. The number of urban unemployed has been reduced dramatically and, with government encouragement, urban self-employment has grown rapidly.

27. Even more impressive, however, has been the increase in rural incomes. Information from several sources suggests that at current prices, per capita rural incomes increased by 16-18% p.a. between 1978 and 1981; and when account is taken of price changes, the increase in real per capita incomes has been 10-12% p.a. About 60% of this dramatic increase is due to increased rural production and the remainder to shifts in the terms of trade in favor of rural producers. While areas and households that were already relatively well off may have benefited the most, many poor areas and households have also enjoyed substantial income improvements.

Sectoral Strategies

28. The rapid development of agriculture has been essential because 800 million people depend on agriculture for their livelihood; moreover, rising incomes elsewhere in the economy and the requirements of light industry have placed new demands on agriculture. Between 1978 and 1981, gross agricultural output at constant prices increased by 5.7% p.a.; despite poor weather in 1980 the growth rate was 2.7%, and in 1981 when China was again affected by severe droughts and floods, the growth rate rose to 5.7%. There has been a substantial diversification of the sector, with production of cash crops expanding rapidly and large increases in livestock and sideline production. Grain production has also increased since 1978 despite a decline in the grain area, but domestic grain requirements have increased more rapidly due to higher incomes and fast-growing requirements for livestock feed. As a result, foodgrain imports have been expanding steadily.

29. The strong performance of agriculture in recent years is largely due to the combination of improved terms of trade for agriculture and other policy interventions and institutional changes that encourage local and institutional specialization according to comparative advantage. Of particular importance have been the changes in the organization and management of rural collectives (para. 15).

30. Adjustment policy in industry has included increased emphasis on light and consumer goods industry rather than heavy industry (para. 16); stress on modernization of existing enterprises, particularly through importation of new technology; and energy conservation. Promotion of manufactured exports has also been necessary to pay for imported technology. These exports have been growing rapidly but still account for only 4% of gross industrial output, and imported equipment as a share of capital construction in industry has risen from 3% in 1978 to 26% in 1981.

31. Reforms in industry have focussed the attention of organizations and individuals on profits and efficiency (para. 15). Innovations have included profit retention schemes, piece rate wages, and bonuses, which for workers in state enterprises now average more than one month's pay. New types of industrial organization include foreign partnerships, joint ventures between urban state industrial enterprises and rural communes, and industrial corporations with authority over a group of enterprises producing similar output. Charges on the fixed assets and working capital of state enterprises are intended to encourage them to use capital more productively. However, these reform measures have not yet been backed by price reform and enterprises still do not bear full responsibility for losses.

32. Since 1979 when energy conservation became a major policy issue, energy consumption has stagnated or fallen while NMP has grown by 10%. As a result, China has remained a net exporter of energy despite declines in energy production in 1980 and 1981. The fall in energy use per unit of output has been due in part to the changing structure of industry: heavy industry consumes about four times as much energy per unit of output as light industry, and heavy industry output grew very slowly in 1980 and declined in 1981. The Government has been stressing the importance of improved efficiency and energy savings within sectors and has been pursuing energy conservation through rationing and other administrative measures.

33. Market-oriented reforms and greater regional specialization call for expanded and more efficient domestic transportation and commercial systems. In the commercial sector, the real value of sales has risen rapidly and the role of markets in the allocation of resources has expanded. Collective and individual commercial activities have proliferated, filling gaps left by, and forcing improvements in, the state commercial system. Growth in the volume of freight transport slowed greatly in 1980, and there was virtual stagnation in 1981, indicating that bottlenecks in this sector remain severe.

Development Issues and Prospects

34. Although changes in the system of economic management as well as in the structure of the economy will undoubtedly continue, a difficult period of transition lies ahead. After spending three decades pursuing a particular set of goals with particular instruments, the country will inevitably find it hard to switch to a path that is not only new for China, but also one that has been successfully followed by few other countries. Reform of the economic system will be especially difficult. The measures described above, though diverse in form, have a unity of purpose, namely to make the economy more efficient in the sense of both cutting costs and matching supply more closely with demand. But the attempt to reform parts of the economic system without a coherent overall program has also had some adverse consequences. Bureaucratic reform has been initiated and the momentum of reform is being sustained in the rural collective sector, but economic reform on the scale envisaged will require careful management and coordination.

35. Constraints. China's efforts to improve its people's living standards will, in the coming decade, be subject to a tight set of interlocking constraints. Some of these are of long standing; they reflect the country's fundamental resource constraints, especially the shortage of agricultural land and the difficulty of increasing yields further. Others are of more recent origin, however, and largely reflect the price that the country must still pay for more than a decade of waste and economic mismanagement starting in the mid-1960s. They include shortages of trained manpower, energy, and financial resources for new investment.

36. The food problem facing China in the 1980s is likely to be similar to that in the past, but it may be exacerbated by growing demand for feed-grain to support increased meat production. Grain output will continue to be constrained because of the extreme shortage of new cultivable land and the limited opportunities that remain for increasing yields. Although substantial gains will probably be possible in the short and medium term through improved policies and management, the foodgrain balance will remain precarious and substantial food imports will have to be maintained. Maintaining a low population growth rate is also crucial.

37. In both rural and urban areas, the country's effort to modernize the economy will be seriously constrained by the lack of trained manpower. Despite considerable progress in basic education, technical and higher education has been neglected and was severely disrupted during the Cultural Revolution. Current enrollment in both universities and technical and vocational schools is one quarter of the average for other developing countries. Many teachers in advanced education are underqualified, curricula are outdated, and scientific equipment is scarce.

38. The outlook for energy production has recently deteriorated. Oil output peaked in 1979 at 106 million tons, dropped to 101 million tons in 1981 and is likely at best to remain at about 95-100 million tons a year during the 1980s. Coal output (which contributes about 70% of total commercial energy) declined to 620 million tons in 1980 and remained at the same level in 1981. It is unlikely to exceed 700 million tons in 1985 and about 850 million tons in 1990, even if high priority is given to this subsector. Growth of total primary energy production in the 1980s will thus not exceed 3% per year - less than one quarter of the 1952-80 growth rate.

39. The prospects for economic growth in the 1980s will thus depend critically on reducing energy use per unit of output. In particular, the availability of oil for use as an industrial raw material will fundamentally influence growth prospects. The potential for energy savings is very large, as China is now among the world's most inefficient users of energy. In addition to substantial new investment, however, conservation will require fundamental reform of energy allocation procedures, incentives for reduced consumption and changes in relative prices, and indeed, a total change of thinking at the enterprise level on the way energy is used - all of which will be difficult and slow to implement.

40. The energy sector is already absorbing over 40% of industrial investment and very large capital outlays would be required in the next several years to accelerate the growth of energy output in the second half of the 1980s. Competing claims for investments in other sectors are considerable, especially those for badly needed urban housing and for relieving transport bottlenecks. The attempt to modernize the huge industrial sector built upon outdated technology will also require enormous investment outlays. Thus, notwithstanding the Government's effort to improve the allocation and use of its financial resources, a high level of investment will need to be maintained in the 1980s to build a sound foundation for sustained growth over the longer term. However, investments in key sectors like energy and transport are presently caught between the Government's desire to reduce the saving rate (in order to accelerate the growth of consumption) and its loss of control over parts of the investment program as a result of decentralization and reform.

41. The Government's attempt to foster a much more open economy than in the past may be impeded by a shortage of foreign exchange. Domestic bottlenecks in the supply of certain agricultural and industrial materials, together with the need to purchase foreign technology (in the form of software as well as hardware), will make continued expansion of imports essential for growth and modernization. The rate of growth of export earnings depends critically on two uncertain parameters, namely the rate at which nontraditional manufactured exports can be increased and the degree of success in energy conservation. Even if energy conservation is fairly

successful (growth in energy use at, say, three fourths of the GDP growth rate), oil exports will almost certainly disappear by the second half of the 1980s, and imports of energy may well be required, at least until new domestic production capacity is established. If the external economic environment improves, manufactured exports could grow, from a relatively small base, by 9-10% a year in constant prices during the decade. Nonetheless, declining energy exports will cause total foreign exchange earnings to grow by no more than about 2% a year in the first half of the 1980s and 8% a year in the second half. Thus the strong balance of payments situation in 1981, brought about mainly by restrictive measures (cutbacks in investment), masks serious medium-term constraints.

42. China's access to concessionary capital is limited: apart from what it might obtain from the Bank Group, concessionary capital is only likely to come from Japan and a few other bilateral donors and will likely average only \$500-600 million a year during the 1980s. Quantitative projections show that if China is to maintain reasonable growth and modernization and keep its debt service payments at a manageable level, then it needs to obtain the necessary foreign capital at an average interest rate substantially below the market rate. China also has a strong claim to concessionary lending because it is still one of the poorer countries in the world.

43. For China, as for many other developing countries, the 1980s will be a difficult decade, and one whose problems will be compounded by errors made in the 1960s and early 1970s. But looking further ahead, China's economic prospects appear favorable. By 1990, most new entrants to the labor force will have received some secondary education, and the skilled manpower deficit will have been reduced. Further progress will have been made in tapping China's large energy potential, and in using it more efficiently. Continuation of recent manufactured export trends should generate sufficient foreign exchange for the Government to have more confidence in using foreign capital and be less concerned about its terms. If the country's immense wealth of human talent, effort and discipline can be combined with policies that increase the efficiency of resource use, China will be able, within a generation or so, to achieve a substantial increase in the living standards of its people. Whether this potential can be realized, however, will depend crucially on the success of the Government's program of reform and adjustment in the 1980s.

PART II - BANK GROUP OPERATIONS IN CHINA

44. China's change of representation in the Bank Group took place in May 1980. At that time, the country had already embarked on a program of economic adjustment and reform, though its extent and direction were - and remain partly - undefined. The Government has recently been reorganizing the bureaucracy, reducing the number of agencies and personnel, with a view

to improving efficiency and coordination. It is against this background of uncertainty and change that the Bank defined the objectives of its work in China and developed its initial work program.

45. In view of the particular circumstances of China, and the policy and economic transitions now under way, Bank lending to China should aim to further several broad objectives. First, the Bank should try to facilitate China's re-entry into the world community. The Bank's experience in a wide range of member countries can do much to mitigate the negative impact of China's lengthy isolation. Second, the Bank should assist China in removing the major constraints on development - energy, transport, other infrastructure, skilled manpower, and modern technology. Perhaps even more important, it can help the authorities to use these and other inputs more efficiently, by improving project analysis and investment control, as well as overall economic management and planning. Finally, the Bank should assist the Government in its efforts to reduce remaining poverty; in view of China's success in meeting the basic needs of most of its people, the priority is increased attention to raising rural earning power in the poorest regions of the country.

46. In the initial two years of the Bank/China relationship, substantial economic and sector work has been carried out. The Bank has produced an introductory economic report on China's past development performance, economic system and future prospects. The report - comprising a main volume, a statistical annex and seven sector annexes - was distributed to the Executive Directors in June 1981. It has been translated into Chinese and the Government is distributing it widely among officials in China. An updating Country Economic Memorandum is under preparation. The Bank has completed sector work in two areas: first, it helped to develop methods that should improve project evaluation by the new financial intermediary, the China Investment Bank (CIB); second, it completed a rural credit study, which reviewed China's rural investment and financial systems, especially the operations of the Agricultural Bank of China. Work in both these areas precedes and complements project work.

47. Work on the lending program has resulted in approval of two projects so far. In June 1981, the Executive Directors approved the University Development project, which involved a \$100 million credit and a \$100 million loan. The North China Plain Agriculture project, which involves a Credit of \$60 million, was approved in June 1982. A summary statement on these projects is contained in Annex II.

Work Program

48. The Bank is continuing its program of economic and sector work. In addition, the Government and the Bank have agreed on a program of collaborative economic research, which will apply advanced analytical techniques, develop China's capacity for economic research, and broaden both the

Bank's and China's understanding of the development process. Specific sector work will involve a review of the health sector, focusing on the rural health care delivery system and on health manpower development. Other studies - in areas such as river basin development under the North China Plain Agriculture Project, and agricultural manpower planning and research under the proposed project - are expected to be undertaken in connection with the preparation and implementation of projects. Special studies have also been initiated on agricultural pricing, energy conservation, manpower development, and urban planning and management in Shanghai.

49. The Bank's lending operations will concentrate on the Government's priority sectors. In energy, the Bank's efforts will help to increase the supply of fuel and power. One petroleum project at the country's largest and most productive oilfield, Daqing, would mainly help develop new reserves and introduce enhanced recovery techniques, while another at Dongpu would comprise both development and exploration. Other operations are proposed to support hydroelectric power generation and the development of underground coal mines. In another key sector, transportation, operations are expected to begin shortly through a project presented simultaneously with the proposed project. This transportation project would assist China in expanding and modernizing three ports, since the port subsector is expected to play a vital role in China's efforts to speed development through the import of foreign goods and technology, as well as to increase export earnings. Work has also begun on a first railways project, which would help increase capacity for transporting coal from mines in Shanxi Province to the east coast cities and ports. In the industrial sector, the Bank is assisting the China Investment Bank, which will contribute to the expansion and modernization of light industry on the basis of systematic project evaluation. In agriculture, a second project would help develop uncultivated land in Heilongjiang for the production of various grains. Under the proposed project the Bank would support agricultural education and research, which together can provide much needed skilled agricultural manpower and the basis for further increases in yields. Another education project would support expansion of the TV university and a pilot program of basic colleges. Based on government requests for project assistance over the next few years, the Bank expects to continue emphasizing the energy and transport sectors, followed by agriculture, education and industry.

50. To complement the Bank's efforts in economic and sector work and operations, the EDI has organized courses and seminars aimed at improving national economic management, sectoral planning, and project selection and implementation. EDI's FY82/83 China program covers national economic management; regional development; general project planning; power, urban and transport projects; transport planning and policy; and development banking.

PART III - AGRICULTURAL EDUCATION AND RESEARCH

The Role of the Agricultural Sciences in Development

51. China's continued ability to feed a growing population and to ensure an adequate supply of agricultural raw materials for an expanding industrial sector depends on increasing agricultural output. Expansion of production in the years ahead, however, faces serious obstacles - the scarcity of arable land, major problems of soil and water conservation, and the decreasing marginal return that can be expected from further inputs of labor. In addition, China's very successes in the past in achieving high yields per hectare through increased use of chemical fertilizers, expansion of water control, and development of high-yielding varieties make the task of raising yields still higher more difficult than in countries where farming is less developed. What is required are new breakthroughs in the agricultural sciences and technology and their effective application at the production level. Yet China's agricultural training and research system, the instrument to effect such improvements, is at present inadequate to the task. As a result, shortages of trained agricultural manpower appear at both the skilled and professional levels and China has fallen further behind the advanced countries in her research capacity in the agricultural sciences. To redress this imbalance, the project will assist in improving the quantity and quality of agricultural education and research, and strengthen planning in this field.

52. To face the challenge of the coming decades - keeping agricultural output ahead of population growth - China has given high priority to agricultural modernization. The long-term objective is to reach advanced world levels in yields of major agricultural products by the turn of the century.

Higher Education and Research in the Agricultural Sciences

53. Overview. While primary and secondary school enrollment ratios have grown rapidly in China and now significantly surpass those in other developing countries (e.g., at the secondary level 46% compared to around 26%), at the tertiary level China has only 1.2% of the population in age group enrolled. Moreover, not only in terms of quantity but also in terms of quality, higher education in China at present is unable to meet the need for highly trained professionals particularly in the sciences. In 1979, there were not more than 3,000 with postgraduate training in agriculture. China is currently estimated to need 17,000-20,000 high-level professionals.

54. The Ministry of Education (MOE) is the ultimate controlling authority for the entire educational system, though the functions of management, operation, and financing of schools are shared with other ministries and with the provincial, prefectural and county authorities. Agricultural education and training are offered in both nonformal and formal programs. The former consist of: (a) short training courses for cadres conducted at

the agricultural colleges; and (b) spare-time education organized at the commune and brigade levels. Formal programs are offered in tertiary institutions - colleges and universities - and at the senior secondary level in technical agricultural schools and general secondary schools with agricultural programs. Certain specially funded or "key" colleges and universities are jointly administered by the MOE and a specialized ministry such as the Ministry of Agriculture (MOA).^{/1} The State Agricultural Commission (SAC) has oversight functions vis-a-vis the entire tertiary system in its capacity of coordinating agency for ministries and agencies concerned with agriculture.

55. Agricultural Education. In 1981, 302 general secondary schools were converted into agricultural technical schools at the senior secondary level and enrolled an estimated 100,000 students. This is in addition to some 3,000 schools listed as "agricultural middle schools" and enrolling around 320,000. The combined enrollment from these two sources, the only two types of secondary institutions specifically designated "agricultural", represents less than 1% of total enrollees at the secondary level. At the tertiary level, there are 73 agricultural institutions with a total student enrollment in 1981 of 80,600 and teaching staff numbering 21,000. This represents around 8% of all enrollments at higher level institutions in China and 9% of staff. The agricultural colleges offer a large number of separate, highly specialized undergraduate programs. Since the interdisciplinary approach has received little emphasis, graduates tend to have knowledge of their own, often narrow, technical specialties, but limited understanding of the problems of agriculture as a total system. Recent changes in admissions policy and curriculum reflect new directions in education in the period following the Cultural Revolution. Since 1977, students have gained admission to higher educational institutions on the basis of their scores on a uniform national entrance examination. In 1979, 4.7 million students sat for 272,000 places at all colleges and universities.

56. Agricultural Research. Over the past 30 years, science and technology in China have made significant contributions to agricultural development. Discovery of high-yielding varieties of rice and their effective dissemination among farmers, for example, brought about impressive increases in total rice production. However, the quality and pace of research was not sustained, in part due to prolonged periods of isolation from international research and development activities. The present research agenda identifies scientific research and the popularization of results as the key to accelerating growth in an already labor- and land-intensive agricultural sector. Along with continued research on major grain crops, planners are calling for experimental work in farm management, farm mechanization, chemical fertilizers, and cropping patterns. Much emphasis has been placed as well on tackling problems of resource use-water conservation, soil erosion and deforestation. Implementation of this research program requires an effective research structure and adequate skilled and professional manpower.

^{/1} The MOA has now been expanded and renamed the Ministry of Agriculture, Animal Husbandry and Fishery.

57. Research is carried on by four different types of research institutions. At the apex of the research pyramid are the State Science and Technology Commission (SSTC) responsible for overall planning and administration of China's scientific work, the Chinese Academy of Sciences (CAS), and the Chinese Association for Science and Technology (CAST), which coordinates the activities of professional societies. Each agency supervises affiliates at the provincial level. A second part of the research structure is ministry-supervised research. In agricultural research, the most prominent of the ministerial agencies is the Chinese Academy of Agricultural Sciences (CAAS) under the MOA. The CAAS is responsible for 32 research institutes with a total research staff numbering around 7,500. Research programs at colleges and universities represent a third type of research activity. In the past few years, higher education institutions have increasingly taken on research projects assigned by the Government. Providing the base of support for the research structure are the research organizations run by the provinces, prefectures, and counties. Nationwide, there are some 1,340 agricultural research institutes at the prefectural level and above, with a total research staff of 46,000.

Issues in Education and Research in the Agricultural Sciences

58. Three main weaknesses have been identified in the present system of higher agricultural education and research:

- (a) poor quality of teaching and research work as a result of insufficient and obsolete equipment, deficiencies in the academic qualifications of teaching/research staff, and narrowly conceived curricula;
- (b) low output in terms of number of graduates and volume of research, attributable to inadequate and substandard space and lack of postgraduate programs; and
- (c) inefficient organization and management of resources at both national and institutional levels, arising from weaknesses in planning in the manpower and research areas and from a lack of experience in modern management methods.

Poor Quality of Output

59. Equipment. Colleges and research institutes are hampered in their efforts to improve teaching and research quality by an insufficiency of both basic equipment and sophisticated equipment for more advanced research. The need for basic teaching equipment is particularly acute. The SAC estimates that the present quantity of equipment at the agricultural colleges allows for conducting only 50-60% of the experiments required by the MOE standard syllabus. Likewise, the insufficiency of up-to-date equipment at the research institutes adversely affects the quality of research output.

60. Staff Qualifications. Teaching and research staff of the agricultural colleges and institutes are underqualified by usual academic standards and lack exposure to international research, a factor which in turn affects the quality of both the graduates and research work produced by these institutions. Data indicate that over 80% of the teaching/research staff have had less than 5 years of postsecondary education. Half of these are in the below 45 age group, the very people who soon will move into academic leadership positions.

61. Curriculum. The undergraduate curriculum at the agricultural colleges suffers from two major shortcomings: (a) it is divided into too many separate specializations to the neglect of broad agricultural problems; and (b) it lacks adequate coverage of the social sciences. The tendency towards compartmentalization means that a student learns a narrow technical specialty without ever relating it to other fields within the agricultural sciences and to farming as a total system. Yet an integrated and flexible approach to the study of agriculture is becoming increasingly important as China implements new agricultural policies.

Low Level of Output

62. Space. Problems of lack of space and/or substandard facilities at agricultural colleges and research institutes have impeded increases in enrollments and volume of research. Removal of entire institutions to the countryside during the Cultural Revolution resulted in loss or deterioration of physical plant at the home base as buildings were occupied for new purposes. The return of institutions to their original sites in the 1977-79 period has posed problems of reoccupation, renovation, and replacement of school buildings.

63. Postgraduate Programs. The projected supply of high level manpower with postgraduate training cannot meet national needs for advanced training and research during the next two decades. Agricultural research institutes and administrative units require an additional 7,000 to 10,000 high level professionals, bringing the total current requirement to between 17,000 and 20,000. Yet with the current postgraduate enrollment in agriculture at 850 - a mere 1% of total enrollment at the 73 agricultural colleges and universities - the country will have a maximum of only 6,000 additional professionals by 1990. Moreover, the real dimension of the shortage may be even larger than the aggregate balance would suggest due to large imbalances by specialization and spatial distribution. This shortfall represents a severe constraint to research output in the agricultural sciences. At present, both colleges and research institutes are in the process of launching new postgraduate studies programs to produce much needed high level researchers.

Inefficient Organization and Management of Resources

64. Linkages. Institutional cooperation along horizontal lines needs strengthening if China is to make best use of limited finances, equipment and supply of highly trained manpower. The present lack of collaboration often leads to excessive duplication of research.

65. Staff Utilization. More efficient utilization of existing staff would enable Chinese agricultural colleges to expand enrollments significantly without increasing staff size. The teacher/student ratio for the 73 agricultural colleges is 1:3.6, which is about one-third of the corresponding ratio in other countries. While improvement in the ratio is warranted, the extent of possible improvement is limited by several factors. First, the present large staff size is in part a legacy of the Cultural Revolution when it was common practice to swell faculty ranks with academically unqualified staff. Second, it is accepted practice in China to retain faculty long past what would be considered normal retirement age elsewhere. Third, the institutions consider it desirable to offer as many specializations as possible, which, in view of the small total enrollment, leads to the need for a more diversified, and therefore large, staff. Despite these limitations, the Government recognizes the importance of improving staff utilization and is taking steps in that direction.

66. Facilities Utilization. Poor utilization of space also impedes expansion of enrollments. For example, lecture halls generally are used only in the morning and laboratories only in the afternoon. School facilities are often not used at all for many weeks of the summer vacation. The problems of poor staff and space utilization are compounded by weaknesses in library management, record-keeping, and accounting practices. In the latter two areas, use of outdated methods impedes day-to-day efficiency and acts as a brake to institutional planning. In the case of college libraries, while the majority have adequate book collections, few offer audiovisual materials and most operate inefficiently, open only 7 hours per day and are staffed by poorly trained personnel.

Government Plans and Strategy

67. As part of current readjustment policies, the Government plans to improve the quality, expand the output and increase the teaching and research capabilities of the agricultural education and research systems. Efforts are being made to develop teaching and research units that in terms of faculty, equipment and quality of graduates will exist on a par with high standard institutions in developed countries. In research the goal is to lay the foundation during the 1980s of a comprehensive and productive research system, enabling China to achieve world levels in the agricultural sciences by the end of the century.

68. As part of its strategy to strengthen agricultural education and research, the Government has selected 11 agricultural colleges and 6 existing research institutes for an intensive development program. The 17 institutions were selected on the basis of geographical location, size of enrollment, quality of faculty/staff, and, overall, an assessment of their potential contributions to an improved system of agricultural education and research. The 11 colleges were chosen to provide major geographic regions with a good quality higher agricultural college. Nine of the 11 have been designated as key colleges, entitled to special funding and expected to become centers of excellence. The 11 colleges enroll 24% of undergraduates attending all 73

agricultural colleges and universities. Their proportion of professors and associate professors to total teaching staff (16%) is double the average figure for all 73. On the research side, five of the six institutes designated by the Government for special support represent important elements of the agricultural system - animal husbandry, aquatic products, meteorology, water conservation and forestry - while the sixth, the CAAS' library and information service, will serve as the clearinghouse for the entire agricultural research system. In addition to its development program for the 6 existing institutes, the Government has established a major new National Rice Research Institute (NRRI).

69. External Assistance. The Government expects to finance the planned expansion and improvement program for agricultural education and research mainly with its own resources and major assistance from the Bank Group. Some multilateral aid is being provided by UNDP; bilateral cooperation includes assistance in feasibility studies, fellowship programs, and exchanges of scholars.

PART IV - THE PROJECT

70. The proposed project was prepared by the Government with the Association's assistance and was appraised in October 1981. Negotiations were held in Washington from April 21-23, 1982; the Chinese delegation was led by Mr. Zhang Quan of the Ministry of Foreign Economic Relations and Trade. A Staff Appraisal Report (No. 3819c-CHA dated October 14, 1982) is being distributed separately. Supplementary project data are provided in Annex III.

71. Objectives and Scope. In support of the Government's program of strengthening higher education and research in the agricultural sciences, the proposed project will assist 11 colleges, 6 existing research institutes, and NRRI. In addition, the Government will undertake studies of agricultural manpower and the agricultural research system.

72. The project will pursue three broad objectives to assist the 18 institutions:

- (a) to improve the quality of teaching and research by:
 - (i) implementing a program of overseas fellowships and study tours for faculty/staff;
 - (ii) arranging for visits of expatriate specialists; and
 - (iii) providing sufficient, modern scientific equipment, books and materials.
- (b) to expand enrollment and research capacity by:
 - (i) rehabilitating facilities and constructing new dormitories, classrooms, and laboratories; and

- (ii) developing new programs at the postgraduate level.
- (c) to strengthen the organization and management of resources in agricultural education and research by:
 - (i) arranging overseas training programs for administrators, librarians, and computer center directors; and
 - (ii) providing specialist services in the management field.

The project will also provide for preparation of future investments in agricultural education and research, in particular through the two project studies.

Improvement of Quality

73. Staff Development. The proposed project will help strengthen the professional qualifications of the teaching and research staff at 11 agricultural colleges and 6 research units by providing 633 overseas fellowships and grants totalling 720 man-years. Fellows and study tour participants will be trained in appropriate foreign languages in accordance with programs acceptable to the Association (draft Development Credit Agreement, Section 3.07). Around 8% of total staff and 16% of those under age 45 at the colleges and institutes will receive upgrading in various science fields under the project, with around 10% slated to go on doctoral study programs and 25% on master's programs. In addition, the proportion of staff with higher academic capability (6+ years of postsecondary education) will be almost doubled, with the under-45 age group registering a threefold increase. The project will finance specialist services as follows: (a) short-term assignments of expatriate specialists in various agricultural sciences for about 12 man-years of services, and (b) language training experts to staff the project's language training facilities (total of 30 man-years).

74. Equipment. The project will also seek to raise the quality of training and research at the project institutions by addressing the issue of insufficiency and obsolescence of equipment. Given the preponderance of undergraduates at the 11 agricultural colleges, the major portion of laboratory equipment items allocated to the colleges from total project funds will be used for practical training in undergraduate courses. To a lesser extent, equipment will be supplied to specialized laboratories designed for graduate training and research. This new equipment will permit an increase in the percentage of experiments conducted per course out of the total required by the standard syllabus from around 60% to 85%. Computers to be financed under the project fall into two main categories: (a) mini computers serving the general needs of teaching, research and records management at the project colleges, and (b) main-frame computers appropriate to specific research requirements of certain of the research institutes. To help strengthen library facilities at the project institutions, project funds will be applied to establishment of audiovisual units within the library systems.

Expansion of Output

75. Expansion of Space. To increase enrollments at the 11 agricultural colleges and add to postgraduate intake and research facilities at the 6 existing institutes, the project includes a civil works program to rehabilitate and expand laboratory, dormitory, and classroom space. Enrollments are expected to increase by 30% for undergraduates (from 18,000 to about 25,000) and more than fourfold at the postgraduate level (from 450 to over 2,000).

76. Development of Postgraduate Programs. To assist in increasing the number of students at advanced levels and, hence, the volume of research output, the project will aid in the development of formal postgraduate programs. Specialist services and sophisticated equipment will be provided to help establish master's and doctoral degree programs in the agricultural sciences. Over the life of the project, the colleges/institutes expect the addition of around 150 postgraduate programs.

Improved Resource Organization and Management

77. Institutional Management. The proposed project will address management needs through provision of specialist services and fellowships. A total of 5 man-years will be applied specifically to advisory services in the management field. Management specialists will review the current operation of selected project institutions, offering advice, as appropriate, on improved management systems and practices and on space utilization and recommending more effective intercollege/institute linkages. Academic specialists also will assist in this area to the extent possible. Staff development proposals drawn up by each project institution call for sending over 100 college/institute administrators (including presidents or vice presidents of colleges and institute directors, registrars, and managers-designate of the computer centers) on tours to study management of similar institutions abroad.

National Rice Research Institute (NRRI)

78. The Government has authorized the establishment of a National Rice Research Institute (NRRI) under the CAAS to help overcome present duplication of efforts in rice research and to promote the development of advanced research in this area. Plans and designs for the new institute have been formulated through the joint efforts of the CAAS and the International Rice Research Institute. While details of the institute's policies and operations are not yet settled, NRRI's objectives are to:

- (a) carry out projects in rice research of national and long-term significance and requiring sophisticated equipment and facilities;
- (b) develop new research methodologies in all areas related to rice production;

- (c) enlarge the pool of highly trained researchers by providing both an overseas training program for NRRI senior staff and a postgraduate study program for recent university graduates; and
- (d) coordinate the research efforts of provincial and prefectural rice research institutes, thus fostering efficient use of limited resources.

The project will assist the Government in providing NRRI with equipment such as laboratory instruments, computers, audiovisual equipment and farm machinery, as well as in constructing a conference complex and housing. To enable NRRI to carry out its functions and to improve the quality of research, NRRI will set up both local and foreign training programs as part of the project. Specialist services will also contribute to staff development.

Studies and Preparation of Future Projects

79. Studies. To enable the Government to improve its planning capability in manpower and research and to lay the foundation for future outside donor assistance in the agricultural education, training and research areas, the project will include two major studies, one of agricultural manpower, the other of the agricultural research system. The research study will consist of two phases. The first phase will aim at establishing the high priority agricultural development objectives and areas of research focus to attain the objectives. The second phase, to be formulated on the basis of the first phase findings, will consist of detailed studies leading to proposals for strengthening and modernizing of the agricultural research system. A draft report is expected to be completed around mid-1984. The manpower study will be conducted in a pilot province. Its objectives are twofold: (a) to assess the future requirements for high and medium level manpower in agriculture as a basis for the identification of future investment in agricultural education; and (b) help develop Chinese expertise in manpower planning and manpower survey and projection methodologies. The study is scheduled to be completed around March 1985. The Government has agreed to carry out the studies in accordance with timing and terms of reference acceptable to the Association, and to provide the Association with a summary and analysis of the findings (draft Development Credit Agreement, Section 3.08). Understandings on the schedule and scope of the studies were reached at negotiations.

80. Preparation of Future Projects. China has important needs for further development in the agricultural education subsector. An example of a priority area for future investments is agricultural teacher education, particularly at the secondary school level where an inadequate supply of teachers of agricultural science is impeding the Government's efforts to raise both the quantity and quality of agricultural education and training. To prepare for future investments in such areas, the project will include technical assistance in the form of specialist services and fellowships.

Project Evaluation

81. The Government and the Association have agreed that the project will contain an evaluation component under which progress towards project objectives will be measured annually during and at the end of the project and for some years thereafter (draft Development Credit Agreement, Section 4.03(a)). For this purpose, project objectives have been translated into 20 measurable indicators in four categories: quantitative change, qualitative change, research improvement and management improvement. Understandings on the project indicators and targets were reached between the Government and the Association at negotiations. For an index of project performance relative to manpower needs, colleges and institutes will conduct annual tracer surveys of graduates to monitor the match between employment and field of academic specialization. Surveys will be inaugurated at the beginning of the project and continued until 1989 so as to include evidence after the completion of the project in 1987 (draft Development Credit Agreement, Section 4.03(b)).

Project Management and Implementation /1

82. Responsibility for implementing the project will rest with the SAC. The Deputy Director of the SAC's Bureau of Science and Education will assume overall responsibility for directing the project. In his capacity of Project Director, he will be assisted by the division chiefs of the Bureau's Education Division and Science and Technology Division. A specially created Project Office (PO) established by the Bureau of Science and Education will be responsible for day to day management of the project and will be maintained until the Closing Date (draft Development Credit Agreement, Section 3.01(b)(i)). The PO will coordinate inputs from the SAC, the six ministries/agencies under the SAC that are involved in the project, the recently established Project Commission (para. 84), and the colleges and institutes on all matters

/1 In mid-1982, the Government announced its plans for reorganizing, and in particular consolidating, its bureaucracy in an attempt to improve efficiency. As part of this program, the SAC is being disbanded and many of its functions and staff are being transferred to the new Ministry of Agriculture, Animal Husbandry and Fishery (MAAF). Despite these and continuing organizational changes made since the project was negotiated in April, the project will be implemented by the same offices and groups of people (though as members of different agencies, particularly MAAF). A period of transition is now in effect, as the complete government reorganization has yet to be implemented. For these reasons the description of implementation arrangements (see para. 82) in force at the time of negotiations has not been changed in the President's and Staff Appraisal Reports. The legal documents refer to the SAC "and any successor thereto," to cover changes resulting from the reorganization (draft Development Credit Agreement, Section 1.02 (a)).

related to project implementation. It will work as well with other ministerial agencies, most importantly the China National Technical Import Corporation (CNTIC) of the Ministry of Foreign Economic Relations and Trade, the Government's agent for equipment procurement. The SAC has also created two special task forces to carry out the project studies.

83. At the college/institute level, project implementation units have been established with appointed directors and staff representatives from each of the specializations to be assisted in the project. These project units will appoint all civil works and furniture contractors, assist the PO in drawing up equipment specifications, be responsible for procurement of local equipment, arrange for installation and maintenance of imported equipment, and prepare project budgets and annual implementation schedules.

84. A Project Commission (PC), with functions and responsibilities acceptable to the Association and made up of representatives from project colleges and institutes, has been formed to assist in project implementation and will be maintained until the closing date (draft Development Credit Agreement, Section 3.01(b)(ii)). The PC's major functions are: (a) to provide technical expertise in all specializations so as to guide the project effectively; (b) to assist the PO in reviewing equipment lists, drawing up equipment specifications, and evaluating bids from suppliers; (c) to review college/institute staff development plans and help select study locations and subjects for overseas training fellowships; and (d) to determine requirements for specialist services and supervise selection of specialists. The PC also will be concerned with arranging for installation of equipment and advising project institutions on the most effective use and maintenance of equipment.

85. Fellowships and grants for college and institute staff will be awarded on the basis of selection criteria and procedures agreed upon between the Government and the Association (draft Development Credit Agreement, Section 3.06). Understandings on selection criteria and procedures were reached at negotiations. The fellowship/grant program will be managed by the PO with the assistance of the PC and appropriate departments within the colleges and institutes. Specialists in academic subjects, languages and management will be selected in accordance with the "Guidelines for the Use of Consultants by World Bank Borrowers and by the World Bank as Executing Agency" (August 1981) (draft Development Credit Agreement, Section 3.02).

Project Cost and Financing

86. The total cost of the proposed project is estimated at \$202 million, including contingencies but net of duties and taxes. Cost estimates for civil works, goods, and services are based on April 1982 prices. The technical assistance costs for foreign experts, including salaries, housing costs,

allowances and international air fares, are estimated at \$7,500 per man-month and costs for overseas fellowship training at \$1,500 per man-month. The contingency allowance of \$31 million includes: (a) physical contingencies (\$8 million) estimated at 5% of base costs; and (b) price contingencies (\$23 million), allowing for an estimated price escalation of 4% per annum for computers, and the standard escalation rates (viz. 8% in 1982 and 1983, 7.5% in 1984, 7% in 1985, and 6% in 1986-87) for the local and foreign costs of other project components. Recurrent costs generated by the project are estimated at about \$16 million per annum at April 1982 prices. This will represent less than a one half of 1% increase in the total budget for all levels of education, training and research. The proposed credit of \$75.4 million equivalent (37% of total project costs) will finance all foreign exchange costs for imported equipment and technical assistance. Civil works and the remaining domestic equipment costing \$126 million will be financed by the Government.

Procurement and Disbursement

87. Civil works are in an advanced stage of preparation and will be undertaken and financed by Government in accordance with local procedures. Equipment, books and journals for the project, for a total contract amount of \$72 million, are divided into two categories. One list (37% of the total) contains basic laboratory equipment, and books and journals in Chinese. These are available locally and the quality is reasonable. Such items will be financed by the Government and procured within China in accordance with local procedures, which are acceptable to the Association. The Association will finance the second category (63% of the total) of more sophisticated equipment that is unlikely to be manufactured by local industries. The bulk of this equipment will be procured through international competitive bidding. These equipment items will be grouped into packages to the extent possible for bulk procurement. Contracts estimated to exceed \$200,000 each will be awarded on the basis of international competitive bidding in accordance with Bank Group Guidelines. Local manufacturers will be extended a 15% preference margin, or the prevailing customs duties, whichever is lower, in the evaluation of bids. Items and groups of items estimated to cost less than \$200,000 in each contract and not exceeding an aggregate amount of \$6.0 million may be procured through: (a) limited international tendering, whereby contracts will be awarded on the basis of comparison and evaluation of quotations obtained from at least three suppliers; and (b) direct purchase for proprietary items or where justified by the need for standardization. Assistance in installation, operation and maintenance of the laboratory equipment will be provided under the project by the PC. The Association obtained assurances from the Government that buildings suitable for installation of the proposed equipment will be available before the delivery of equipment to the project institutions (draft Development Credit Agreement, Section 3.09).

88. Award of contracts for items or packages exceeding \$200,000 in value will be referred to the Association for prior review. Contracts valued at \$200,000 or less are estimated to cover less than 25% of total contract values. Equipment will be procured in two phases spread over about two years.

89. The proposed credit of SDR 67.8 million (\$75.4 million equivalent) will be disbursed on the basis of: (a) 100% of the foreign cost of imported equipment or the ex-factory cost of locally manufactured equipment procured on the basis of international competitive bidding; (b) 75% of the invoiced cost of imported equipment procured locally; (c) 100% of the cost of specialist services; and (d) 100% of the foreign costs of overseas fellowships. Disbursements are expected to be completed by June 30, 1988.

Benefits and Risks

90. Benefits. There will be three principal benefits from the proposed project: (a) the improved quality of graduates and research work in the agricultural sciences; (b) the increased output of graduates and research work in these fields; and (c) the improved organization and management of resources in agricultural education and research.

91. Improvement of the quality and increases in the quantity of agricultural science graduates and research should, over the long term, enhance China's capacity to apply science and technology to agricultural development. The large staff training element supported by the project will not only benefit the individual institutions, but also represent a significant step forward in China's efforts to re-establish links with the international research community. As a result of the project, the Government expects a rise in undergraduate enrollment from 18,000 to about 25,000 and in postgraduate enrollment at the colleges and institutes from around 450 to more than 2,000 by 1985. This increased enrollment will not only help fill the need for highly trained researchers, but also have an effect at the farm management level where recent decentralization policies have resulted in a rise in demand for trained personnel.

92. The two major studies to be conducted under the project - one of agricultural manpower in China, the other of the agricultural research system - are expected to enable the Government to (a) improve its overall development planning capability; and (b) lay the foundation for future Bank lending as well as other outside donor assistance in the agricultural education, training and research areas.

93. Risks. Project risks grow out of the Association's limited knowledge of China's agricultural education and research systems. For the research components in particular, questions remain regarding an effective mechanism for identifying research priorities, possible duplication in research projects and the integration of the individual institutes into China's national agricultural research effort. It is expected that the

studies of China's agricultural manpower and agricultural research system proposed in the project will permit the Government to further improve the effectiveness of future operations in these areas.

94. Other project risks relate to the timing of equipment arrival and staff training. Personnel charged with the operation, maintenance and repair of any particular apparatus should have completed appropriate training before the arrival of the item. Likewise, permanent housing for equipment items must be ready prior to arrival to avoid the possible harmful effects of temporary installation. To eliminate these risks, the Government is preparing a coordinated plan for training, building completion and the appointment of staff to oversee the operation and maintenance of project equipment.

PART V - LEGAL INSTRUMENTS AND AUTHORITY

95. The draft Development Credit Agreement between the People's Republic of China and the Association and the Report of the Committee provided for in Article V, Section 1(d), of the Articles of Agreement of the Association are being distributed to the Executive Directors separately.

96. Special conditions of the project are listed in Section III of Annex III. A special condition of effectiveness is that China's State Council shall have approved the Project and the Development Credit Agreement.

97. I am satisfied that the proposed credit would comply with the Articles of Agreement of the Association.

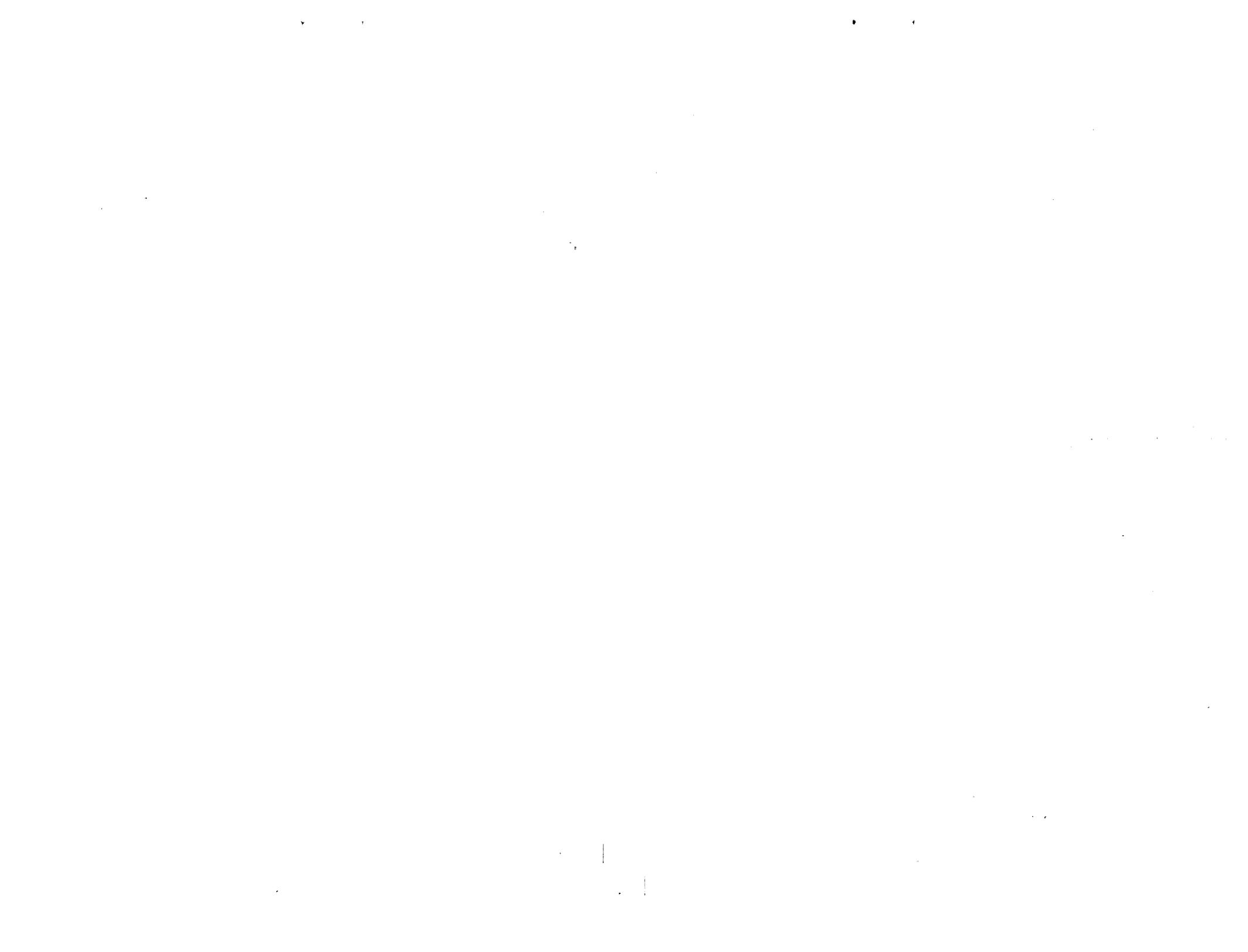
PART VI - RECOMMENDATION

98. I recommend that the Executive Directors approve the proposed credit.

A. W. Clausen
President

Attachments

October 14, 1982
Washington, D.C.



CHINA, PEOPLE'S REP. OF - SOCIAL INDICATORS DATA SHEET

LAND AREA (THOUSAND SQ. KM.)	CHINA *			REFERENCE GROUPS (WEIGHTED AVERAGES - MOST RECENT ESTIMATE) ^{1/2}		
	TOTAL	1960 /b	1970 /b	MOST RECENT ESTIMATE /b	LOW INCOME ASIA & PACIFIC	MIDDLE INCOME ASIA & PACIFIC
TOTAL	9561.0					
AGRICULTURAL	3184.0					
GNP PER CAPITA (US\$)	..	..	290.0	261.4	890.1
ENERGY CONSUMPTION PER CAPITA (KILOGRAMS OF COAL EQUIVALENT)	559.9	434.9	733.6/c	448.7	701.7	
POPULATION AND VITAL STATISTICS						
POPULATION, MID-YEAR (THOUSANDS)	672865.0	815253.0	976735.0	.	.	
URBAN POPULATION (PERCENT OF TOTAL)	..	12.0	13.2	17.3	32.4	
POPULATION PROJECTIONS						
POPULATION IN YEAR 2000 (MILLIONS)			1245.2	.	.	
STATIONARY POPULATION (MILLIONS)			1570.2	.	.	
YEAR STATIONARY POPULATION IS REACHED			2070	.	.	
POPULATION DENSITY						
PER SQ. KM.	70.4	85.3	100.9	158.1	255.9	
PER SQ. KM. AGRICULTURAL LAND	211.8	253.7	302.9	355.9	1748.0	
POPULATION AGE STRUCTURE (PERCENT)						
0-14 YRS.	..	..	32.3	36.8	39.9
15-64 YRS.	..	..	63.7	59.7	56.8
65 YRS. AND ABOVE	..	..	4.0	3.5	3.3
POPULATION GROWTH RATE (PERCENT)						
TOTAL	2.0	1.9	1.8/d	2.0	2.3	
URBAN	..	..	2.8	3.3	3.9
CRUDE BIRTH RATE (PER THOUSAND)	40.1/e, g	39.6/g	21.1/g	29.3	31.8	
CRUDE DEATH RATE (PER THOUSAND)	13.6/e, g	9.6/g	7.8/g	11.0	9.8	
GROSS REPRODUCTION RATE	..	..	1.4/g	2.0	2.0
FAMILY PLANNING						
ACCEPTORS, ANNUAL (THOUSANDS)	..	..	..	.	.
USERS (PERCENT OF MARRIED WOMEN)	..	..	..	19.3	36.3
FOOD AND NUTRITION						
INDEX OF FOOD PRODUCTION PER CAPITA (1969=100)	..	100.0	117.0	108.1	115.6	
PER CAPITA SUPPLY OF CALORIES (PERCENT OF REQUIREMENTS)	86.0/e	..	103.0	97.3	106.4	
PROTEINS (GRAMS PER DAY)	58.0/e	..	62.6	56.9	54.4	
OF WHICH ANIMAL AND PULSE	..	..	26.0	20.0	13.9
CHILD (AGES 1-4) MORTALITY RATE	..	..	4.5/h	10.9	6.7
HEALTH						
LIFE EXPECTANCY AT BIRTH (YEARS)	..	..	64.0/h	57.8	59.8
INFANT MORTALITY RATE (PER THOUSAND)	..	..	56.0/h	89.1	63.7
ACCESS TO SAFE WATER (PERCENT OF POPULATION)						
TOTAL	..	..	..	32.9	32.0
URBAN	..	..	..	70.7	51.9
RURAL	..	..	..	22.2	20.5
ACCESS TO EXCRETA DISPOSAL (PERCENT OF POPULATION)						
TOTAL	..	..	..	18.1	37.7
URBAN	..	..	..	72.7	65.7
RURAL	..	..	..	4.7	24.0
POPULATION PER PHYSICIAN	3009.8/e, i	1709.1/i	1096.2/i	3297.8	8540.4	
POPULATION PER NURSING PERSON	2847.1/e, f	538.8/f	483.2/f	14929.3	4829.4	
POPULATION PER HOSPITAL BED						
TOTAL	2142.5/e	737.8	492.8	1100.4	1047.5	
URBAN	..	..	172.1	301.3	651.6
RURAL	..	..	702.3	5815.7	2597.6
ADMISSIONS PER HOSPITAL BED	..	..	..	..	27.0
HOUSING						
AVERAGE SIZE OF HOUSEHOLD						
TOTAL	..	..	..	..	..
URBAN	..	..	..	..	..
RURAL	..	..	..	..	..
AVERAGE NUMBER OF PERSONS PER ROOM						
TOTAL	..	..	..	..	..
URBAN	..	..	..	..	..
RURAL	..	..	..	..	..
ACCESS TO ELECTRICITY (PERCENT OF DWELLINGS)						
TOTAL	..	..	..	..	..
URBAN	..	..	..	..	..
RURAL	..	..	..	..	..

CHINA, PEOPLE'S REP. OF - SOCIAL INDICATORS DATA SHEET

	CHINA *		MOST RECENT ESTIMATE /b	REFERENCE GROUPS (WEIGHTED AVERAGES - MOST RECENT ESTIMATE) ^{/1}		
	1960 /b	1970 /b		LOW INCOME ASIA & PACIFIC	MIDDLE INCOME ASIA & PACIFIC	
EDUCATION						
ADJUSTED ENROLLMENT RATIOS						
PRIMARY:	TOTAL	102.0	103.0	118.0	97.4	96.2
	MALE	..	..	111.0/k	101.0	99.8
	FEMALE	..	..	114.0/k	87.8	92.1
SECONDARY:	TOTAL	..	..	79.0	53.0	37.6
	MALE	..	..	92.0	63.8	41.1
	FEMALE	..	..	65.0	41.3	34.1
VOCATIONAL ENROL. (% OF SECONDARY)						
		..	..	2.4	1.7	20.8
PUPIL-TEACHER RATIO						
	PRIMARY	..	..	27.0	37.7	35.5
	SECONDARY	..	..	19.0	20.2	25.0
ADULT LITERACY RATE (PERCENT)						
		..	..	66.0	52.1	73.1
CONSUMPTION						
PASSENGER CARS PER THOUSAND						
	POPULATION	..	..	..	1.5	9.8
RADIO RECEIVERS PER THOUSAND						
	POPULATION	..	..	..	35.4	116.5
TV RECEIVERS PER THOUSAND						
	POPULATION	..	..	..	3.2	37.6
NEWSPAPER ("DAILY GENERAL INTEREST") CIRCULATION PER THOUSAND POPULATION						
		..	..	..	16.4	53.7
	CINEMA ANNUAL ATTENDANCE PER CAPITA	..	..	..	3.6	2.8
LABOR FORCE						
	TOTAL LABOR FORCE (THOUSANDS)	234602.4/e,j	339960.5/j	403163.1/j	.	.
	FEMALE (PERCENT)	..	..	..	29.5	33.6
	AGRICULTURE (PERCENT)	..	..	71.0	70.0	52.2
	INDUSTRY (PERCENT)	..	..	17.0	15.0	17.9
PARTICIPATION RATE (PERCENT)						
	TOTAL	37.0/e	41.7	41.8	40.0	38.5
	MALE	..	..	..	51.8	50.5
	FEMALE	..	..	..	23.8	26.6
ECONOMIC DEPENDENCY RATIO						
		..	..	0.9	1.0	1.1
INCOME DISTRIBUTION						
PERCENT OF PRIVATE INCOME RECEIVED BY						
	HIGHEST 5 PERCENT OF HOUSEHOLDS	..	..	..	..	..
	HIGHEST 20 PERCENT OF HOUSEHOLDS	..	..	..	..	..
	LOWEST 20 PERCENT OF HOUSEHOLDS	..	..	..	..	..
	LOWEST 40 PERCENT OF HOUSEHOLDS	..	..	..	..	..
POVERTY TARGET GROUPS						
ESTIMATED ABSOLUTE POVERTY INCOME LEVEL (US\$ PER CAPITA)						
	URBAN	..	..	..	133.8	194.7
	RURAL	..	..	..	111.5	155.1
ESTIMATED RELATIVE POVERTY INCOME LEVEL (US\$ PER CAPITA)						
	URBAN	..	..	..	..	178.2
	RURAL	..	..	..	..	164.9
ESTIMATED POPULATION BELOW POVERTY INCOME LEVEL (PERCENT)						
	URBAN	..	..	..	43.8	24.4
	RURAL	..	..	..	51.7	41.1

.. Not available.
. Not applicable.

NOTES

- * All data exclude Taiwan, China.
/a The group averages for each indicator are population-weighted arithmetic means. Coverage of countries among the indicators depends on availability of data and is not uniform.
/b Unless otherwise noted, data for 1960 refer to any year between 1959 and 1961; for 1970, between 1969 and 1971; and for Most Recent Estimate, between 1978 and 1980.
/c Country estimate is 644 kilogram of coal equivalent.
/d Latest estimate of annual growth of population is 1.2%.
/e 1957; /f Including barefoot doctors; /g Bank crude birth and death rate estimates for 1979 were higher than the official data. The official rates have been adjusted accordingly; /h Bank demographic analyses utilize a higher estimate of the crude mortality rate than the 6.2 that is officially given. The values of infant and child mortality shown here, based on the Bank's analyses, are thus higher than use of the official figures would indicate; and the estimate here of life expectancy is lower than the official figure of 68.2 years; /i Excluding traditional medical doctors.
/j Including military personnel and those awaiting permanent jobs, most of whom are in temporary jobs; /k 1977.

DEFINITIONS OF SOCIAL INDICATORS

Notes: Although the data are drawn from sources generally judged the most authoritative and reliable, it should also be noted that they may not be internationally comparable because of the lack of standardized definitions and concepts used by different countries in collecting the data. The data are, nonetheless, useful to describe orders of magnitude, indicate trends, and characterize certain major differences between countries.

The reference groups are (1) the same country group of the subject country and (2) a country group with somewhat higher average income than the country group of the subject country (except for "High Income Oil Exporters" group where "Middle Income North Africa and Middle East" is chosen because of stronger socio-cultural affinities). In the reference group data the averages are population weighted arithmetic means for each indicator and shown only when majority of the countries in a group has data for that indicator. Since the coverage of countries among the indicators depends on the availability of data and is not uniform, caution must be exercised in relating averages of one indicator to another. These averages are only useful in comparing the value of one indicator at a time among the country and reference groups.

AREA (thousand sq.km.)

Total - Total surface area comprising land area and inland waters; 1979 data.
Agricultural - Estimate of agricultural area used temporarily or permanently for crops, pastures, market and kitchen gardens or to lie fallow; 1979 data.

GNP PER CAPITA (US\$) - GNP per capita estimates at current market prices, calculated by same conversion method as World Bank Atlas (1978-80 basis); 1960, 1970, and 1980 data.

ENERGY CONSUMPTION PER CAPITA - Annual consumption of commercial energy (coal and lignite, petroleum, natural gas and hydro-, nuclear and geothermal electricity) in kilograms of coal equivalent per capita; 1960, 1970, and 1979 data.

POPULATION AND VITAL STATISTICS

Total Population, Mid-Year (thousands) - As of July 1; 1960, 1970, and 1980 data.

Urban Population (percent of total) - Ratio of urban to total population; different definitions of urban areas may affect comparability of data among countries; 1960, 1970, and 1980 data.

Population Projections

Population in Year 2000 - Current population projections are based on 1980 total population by age and sex and their mortality and fertility rates. Projection parameters for mortality rates comprise of three levels assuming life expectancy at birth increasing with country's per capita income level, and female life expectancy stabilizing at 77.5 years. The parameters for fertility rate also have three levels assuming decline in fertility according to income level and past family planning performance. Each country is then assigned one of these nine combinations of mortality and fertility trends for projection purposes.

Stationary population - In a stationary population there is no growth since the birth rate is equal to the death rate, and also the age structure remains constant. This is achieved only after fertility rates decline to the replacement level of unit net reproduction rate, when each generation of women replaces itself exactly. The stationary population size was estimated on the basis of the projected characteristics of the population in the year 2000, and the rate of decline of fertility rate to replacement level.

Year stationary population is reached - The year when stationary population size will be reached.

Population Density

Per sq. km. - Mid-year population per square kilometer (100 hectares) of total area; 1960, 1970 and 1979 data.
Per sq. km. agricultural land - Computed as above for agricultural land only; 1960, 1970 and 1979 data.

Population Age Structure (percent) - Children (0-14 years), working-age (15-64 years), and retired (65 years and over) as percentages of mid-year population; 1960, 1970, and 1980 data.

Population Growth Rate (percent) - total - Annual growth rates of total mid-year population for 1950-60, 1960-70, and 1970-80.

Population Growth Rate (percent) - urban - Annual growth rates of urban populations for 1950-60, 1960-70, and 1970-80.

Crude Birth Rate (per thousand) - Annual live births per thousand of mid-year population; 1960, 1970, and 1980 data.

Crude Death Rate (per thousand) - Annual deaths per thousand of mid-year population; 1960, 1970, and 1980 data.

Gross Reproduction Rate - Average number of 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 1980.

Family Planning - Acceptors, Annual (thousands) - Annual number of acceptors of birth-control devices under auspices of national family planning program.

Family Planning - Users (percent of married women) - Percentage of married women of child-bearing age (15-44 years) who use birth-control devices to all married women in same age group.

FOOD AND NUTRITION

Index of Food Production per Capita (1969=100) - Index of per capita annual production of all food commodities. Production excludes seed and feed and is on calendar year basis. Commodities cover primary goods (e.g. sugarcane instead of sugar) which are edible and contain nutrients (e.g. coffee and tea are excluded). Aggregate production of each country is based on national average producer price weights; 1961-65, 1970, and 1980 data.

Per capita supply of calories (percent 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 distribution of population, and allowing 10 percent for waste at household level; 1961-65, 1970 and 1977 data.

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 provide for minimum allowances 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 73 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; 1961-65, 1970 and 1977 data.

Per capita protein supply from animal and pulse - Protein supply of food derived from animals and pulses in grams per day; 1961-65, 1970 and 1977 data.
Child (ages 1-4) Death Rate (per thousand) - Annual deaths per thousand in age group 1-4 years. 10 children in this age group, for most developing countries data derived from life tables; 1960, 1970 and 1980 data.

HEALTH

Life Expectancy at Birth (years) - Average number of years of life remaining at birth; 1960, 1970 and 1980 data.

Infant Mortality Rate (per thousand) - Annual deaths of infants under one year of age per thousand live births; 1960, 1970 and 1980 data.

Access to Safe Water (percent of population) - total, urban, and rural - Number of people (total, urban, and rural) with reasonable access to safe water supply (includes treated surface waters or untreated but uncontaminated water such as that from protected boreholes, springs, and sanitary wells) as percentages of their respective populations. In an urban area a public fountain or standpost located not more than 200 meters from a house may be considered as being within reasonable access of that house. In rural areas reasonable access would imply that the housewife or members of the household do not have to spend a disproportionate part of the day in fetching the family's water needs.

Access to Excreta Disposal (percent of population) - total, urban, and rural - Number of people (total, urban, and rural) served by excreta disposal as percentages of their respective populations. Excreta disposal may include the collection and disposal, with or without treatment, of human excreta and waste-water by water-borne systems or the use of pit privies and similar installations.

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

Population per Nursing Person - Population divided by number of practising male and female graduate nurses, assistant nurses, practical nurses and nursing auxiliaries.

Population per Hospital Bed - total, urban, and rural - Population (total, urban, and rural) divided by their respective number of hospital beds available in public and private general and specialized hospitals and rehabilitation centers. Hospitals are establishments permanently staffed by at least one physician. Establishments providing principally custodial care are not included. Rural hospitals, however, include health and medical centers not permanently staffed by a physician (but by a medical assistant, nurse, midwife, etc.) which offer in-patient accommodation and provide a limited range of medical facilities. For statistical purposes urban hospitals include WHO's principal/general hospitals, and rural hospitals, local or rural hospitals and medical and maternity centers. Specialized hospitals are included only under total.
Admissions per Hospital Bed - Total number of admissions to or discharges from hospitals divided by the number of beds.

HOUSING

Average Size of Household (persons per household) - total, urban, and rural - A household consists of a group of individuals who share living quarters and their main meals. A boarder or lodger may or may not be included in the household for statistical purposes.

Average number of persons per room - total, urban, and rural - average number of persons per room in all urban, and rural occupied conventional dwellings, respectively. Dwellings exclude non-permanent structures and unoccupied parts.

Access to Electricity (percent of dwellings) - total, urban, and rural - Conventional dwellings with electricity in living quarters as percentage of total, urban, and rural dwellings respectively.

EDUCATION

Adjusted Enrollment Ratios

Primary school - total, male and female - Gross total, male and female enrollment of all ages at the primary level as percentages of respective primary school-age populations; normally includes children aged 6-11 years but adjusted for different lengths of primary education; for countries with universal education enrollment may exceed 100 percent since some pupils are below or above the official school age.

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

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

Pupil-teacher ratio - primary, and secondary - Total students enrolled in primary and secondary levels divided by numbers of teachers in the corresponding levels.

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

CONSUMPTION

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

Radio Receivers (per thousand population) - 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.

TV Receivers (per thousand population) - TV receivers for broadcast to general public per thousand of population; excludes unlicensed TV receivers in countries and in years when registration of TV sets was in effect.

Newspaper Circulation (per thousand population) - Shows the average circulation of "daily general interest newspaper", defined as a periodical publication devoted primarily to recording general news. It is considered to be "daily" if it appears at least four times a week.

Cinema Annual Attendance per Capita per Year - Based on the number of tickets sold during the year, including admissions to drive-in cinemas and mobile units.

LABOR FORCE

Total Labor Force (thousands) - Economically active persons, including armed forces and unemployed but excluding housewives, students, etc., covering population of all ages. Definitions in various countries are not comparable; 1960, 1970 and 1980 data.

Female (percent) - Female labor force as percentage of total labor force.

Agriculture (percent) - Labor force in farming, forestry, hunting and fishing as percentage of total labor force; 1960, 1970 and 1980 data.

Industry (percent) - Labor force in mining, construction, manufacturing and electricity, water, and gas as percentage of total labor force; 1960, 1970 and 1980 data.

Participation Rate (percent) - total, male, and female - Participation or activity rates are computed as total, male, and female labor force as percentages of total, male and female population of all ages respectively; 1960, 1970, and 1980 data. These are based on ILO's participation rates reflecting age-sex structure of the population, and long time trend. A few estimates are from national sources.

Economic Dependency Ratio - Ratio of population under 15 and 65 and over to the total labor force.

INCOME DISTRIBUTION

Percentage of Private Income (both in cash and kind) - Received by richest 5 percent, richest 20 percent, poorest 20 percent, and poorest 40 percent of households.

POVERTY TARGET GROUPS

The following estimates are very approximate measures of poverty levels, and should be interpreted with considerable caution.

Estimated Absolute Poverty Line Level (US\$ per capita) - urban and rural - Absolute poverty income level is that income level below which a minimal nutritionally adequate diet plus essential non-food requirements is not affordable.

Estimated Relative Poverty Income Level (US\$ per capita) - urban and rural - Rural relative poverty income level is one-third of average per capita personal income of the country. Urban level is derived from the rural level with adjustment for higher cost of living in urban areas.

Estimated Population Below Absolute Poverty Income Level (percent) - urban and rural - Percent of population (urban and rural) who are "absolute poor".

Population: 977 million (mid-1980)
GNP per capita: US\$290 (1980)

CHINA - ECONOMIC INDICATORS

	Annual Growth (%) at Constant Prices										
	1957-70	1970-77	1978	1979	1980	1981					
Production											
Gross Output											
Agriculture	2.2	3.4	9.0	8.6	2.7	5.7					
Light industry	8.3	7.8	10.8	9.6	18.4	14.1					
Heavy industry	11.6	9.3	15.6	7.7	1.4	-4.7					
Net Material Product (NMP)	5.2	4.8	12.4	7.0	6.9	3.0					
Prices											
Retail price index (1970=100)	92.2	100.0	102.7	103.3	105.4	111.7	114.4				
NMP deflator (1970=100)	90.7	100.0	99.6	100.4	105.1	106.5	109.6				
Exchange rate (Y/US\$)	2.46	2.46	1.83	1.66	1.54	1.50	1.71				
National Accounts											
	Amount 1981 (\$ billion)	Shares of GDP (%)					Average Annual Growth (%) at Constant Prices				
		1957	1979	1981	1985	1990	1957-70	1970-79	1979-81	1981-85	1985-90
GDP	263.2	100.0	100.0	100.0	100.0	100.0	5.8	5.8	4.9	4.1	4.2
Agriculture	91.4	..	31.4	34.7	33.3	31.4	1.6	3.2	4.2	3.0	3.0
Industry	115.5	..	43.7	43.9	44.9	46.6	12.1	8.9	7.7	4.6	5.0
Other	56.3	..	25.0	21.4	21.8	22.0	3.5	4.3	-3.1	4.5	4.5
Consumption	185.0	76.4	69.8	70.3	73.8	76.2	2.7	5.4	5.0	5.3	4.9
Investment	76.5	23.2	31.1	29.1	27.5	25.0	9.8	6.8	2.1	2.6	2.3
Exports GNFS	24.4	3.7/b	6.0/b	9.2	8.5	10.0	1.6/b	8.0/b	23.1	1.7	7.8
Imports GNFS	22.7	3.5/b	7.0/b	8.6	9.8	11.2	2.3/b	9.4/b	9.3	7.3	7.1
National savings	78.5	23.6/c	31.5	29.8	26.3	24.3	3.9	0.9	2.6
Public Finance											
		As % of GDP									
		1957	1979	1981							
Current revenues (excluding foreign borrowing)		28.7	27.3	21.7							
Current expenditures		15.1	17.0	15.6							
Surplus (+) or deficit (-)		+13.6	+10.3	+6.1							
Capital expenditures		13.7	15.6	8.5							
Foreign borrowing		0.7	0.9	1.8							
Other Indicators											
		1957-79	1979-81	1981-85	1985-90						
GDP growth rate (%)		5.4/d	4.9/d	4.1	4.2						
GDP per capita growth rate (%)		3.5/d	3.6/d	2.8	3.0						
Energy consumption growth rate (%)		8.3	..	..	..			
ICOR		5.4	..	6.3	6.2						
Marginal savings rate		0.42	..	0.17	0.17						
Import elasticity		0.95	1.90	1.78	1.69						

/a NMP basis.

/b Goods only.

/c GDS.

/d Based on the official real NMP index (as are all figures for past NMP and GDP growth in this data sheet). At Indian prices, GNP is estimated to have grown at 4.6% and GNP per capita at 2.7% during 1957-79.

Population: 977 million (mid-1980)
GNP per capita: US\$290 (1980)

CHINA - EXTERNAL TRADE

Indicator	Amount (million US\$ at current prices) 1981	Annual Growth Rates (%) (at constant 1980 prices)									
		Actual					Projected				
		1978	1979	1980	1981	1982	1983	1984	1985	1986	
External Trade											
Merchandise exports	22,027	10.1	25.5	16.8	15.9	-3.9	-0.8	1.7	6.9	7.7	
Energy	5,054	..	..	..	..	-45.2	-51.4	-86.7	-100.0	0
Other primary	5,306	..	..	..	..	6.5	1.6	4.0	4.0	5.0
Manufactures	10,533	..	..	..	..	9.7	9.7	9.7	9.7	9.0
Other	1,134	..	..	..	..	5.0	5.0	5.0	5.0	5.0
Merchandise imports	20,292	32.6	21.7	16.7	-8.6	3.2	15.1	4.3	4.2	7.9	
Food	5,340	..	..	..	..	3.0	7.0	5.0	5.0	5.0
Petroleum	0	..	..	..	..	0	0	0	-/a	107.6
Machinery and equipment	5,317	..	..	..	..	7.8	9.9	4.0	4.0	4.0
Other	9,635	..	..	..	..	3.3	22.5	4.1	4.1	4.1
Prices											
Export price index (1978=100)	..	100.0	113.3	131.3	134.9	137.6	146.7	158.7	171.7	185.5	
Import price index (1978=100)	..	100.0	119.4	139.2	145.5	149.4	158.8	170.4	182.6	195.1	
Terms of trade index (1978=100)	..	100.0	95.2	94.3	92.7	92.1	92.4	93.1	94.0	95.0	
Composition of Merchandise Trade (%) (at current prices)											
	1978	1979	1980	1981	1985	1990	Average Annual Increase (%) (at constant prices)				
							1957-70	1970-79	1979-81	1981-85	1985-90
Exports	100.0	100.0	100.0	100.0	100.0	100.0	1.6	8.0	19.4	0.9	7.8
Energy	13.8	19.5	25.1	22.9	0	0	-/a	0
Other primary	39.7	34.1	28.4	24.1	27.5	26.9	4.0	5.0
Manufactures	46.5	46.4	46.5	47.8	66.5	68.0	9.7	9.0
Other	0	0	0	5.2	6.0	5.1	5.0	5.0
Imports	100.0	100.0	100.0	100.0	100.0	100.0	2.3	9.4	9.9	7.6	7.4
Food	26.3	23.7	24.8	5.0	5.0
Petroleum	0	0	0	0	2.9	10.7	..	0	0	-/a	46.0
Machinery and equipment	17.5	25.2	27.5	26.2	24.3	21.3	6.4	4.0
Other	47.5	49.0	43.2	9.9	4.1
Share of Trade With											
Direction of Trade	Industrial Countries (%)		Developing Countries (%)		Countries with Centrally Planned Economies (%) /b						
	1978	1981	1978	1981	1978	1981					
Exports	37.3	45.9	51.6	50.2	11.1	3.9					
Imports	73.3	76.8	17.5	18.7	9.2	4.5					

/a Petroleum imports in 1985 are projected to total US\$961 million in 1981 constant prices.

/b Includes the Soviet Union, Eastern Europe, Cuba, North Korea and Mongolia.

Population: 977 million (mid-1980)
GNP per capita: US\$ 290 (1980)

CHINA - BALANCE OF PAYMENTS, EXTERNAL CAPITAL AND DEBT
(millions US\$ at current prices)

Indicator	Actual				Projected		
	1978	1979	1980	1981	1982	1985	1990
<u>Balance of Payments</u>							
Exports of goods and services	10,606	15,351	20,901	25,157	24,663	33,700	71,451
of which: Merchandise f.o.b.	9,607	13,658	18,492	22,027	21,585	29,037	70,166
Imports of goods and services	11,912	17,582	23,946	23,628	24,928	38,848	75,509
of which: Merchandise c.i.f.	10,745	15,619	21,243	20,292	21,513	34,126	65,799
Net transfers	597	656	640	467	617	767	1,017
Current account balance	-705	-1,575	-2,405	1,996	352	-4,381	-4,327
Private direct investment	-	-	57	265	315	465	715
MLT loans (net)	-830	822	1,756	769	1,278	2,773	5,536
Official	..	..	..	..	2,198	3,231	5,546
Private	..	..	..	..	-920	-458	-10
Other capital	822	1,362	1,082	-787	0	1,143	-572
Change in net reserves ("-" = increase)	708	-609	-490	-2,243	-1,945	0	1,353
International reserves	6,283	6,892	7,382	10,096	12,041	12,041	18,164
of which: gold	..	..	5,120	5,120	5,120	5,120	..
Reserves as months imports	6.3	4.7	3.7	5.1	5.8	3.7	2.9
<u>External Capital and Debt</u>							
Gross disbursements	..	..	..	..
Concessional loans	..	..	..	..
DAC	..	..	..	..
OPEC	..	..	..	..
IDA	..	..	..	..
Other	..	..	..	..
Nonconcessional loans	..	..	..	..
Official export credits	..	..	..	..
IBRD /c	..	..	..	..
Other multilateral	..	..	..	..
Private	..	..	..	..
External debt							
Debt outstanding and disbursed	..	..	5,441	5,696			
Official	..	..	..	..
Private	..	..	..	..
Undisbursed debt	..	..	..	..
Debt service							
Total service payments	..	..	..	..
Interest	..	..	..	..
Payments as % exports GNFS	..	..	5.0	7.8			
Average interest rate on new loans (%)	..	..	..	..
Average maturity of new loans (years)	..	..	..	..

STATUS OF BANK GROUP OPERATIONS IN THE PEOPLE'S REPUBLIC OF CHINAA. STATEMENT OF BANK LOANS AND IDA CREDITS
(as of September 30, 1982)

Loan or Credit Number	Year	Borrower	Purpose	\$ million		
				IBRD	IDA	Undisbursed
2021 1167	1981	People's Republic of China	Univ. Develop- ment	100.0	100.0	199.7
1261/a	1982	People's Republic of China	Agricul. Develop- ment		60.0	60.0
Total				100	160	259.7
Total now held by Bank and IDA				<u>100.0</u>	<u>160.0</u>	
Total Undisbursed				<u>100.0</u>	<u>159.7</u>	<u>259.7</u>

/a Became effective October 7, 1982.

B. STATEMENT OF IFC INVESTMENTS
(as of September 30, 1982)

None

C. PROJECTS IN EXECUTION

Loan No. 2021 University Development Project \$100 million loan
Credit No. 1167 and \$100 million credit of November 4, 1981;
Date of Effectiveness: February 4, 1982; Closing
Date: June 30, 1986.

Good progress has been made in project implementation; bid evaluation and recommended awards for about \$45 million in equipment have been approved by the Bank. Initial disbursements for technical assistance (about \$300,000) have been made and a major contract for about \$5 million in expert services is awaiting final signature.

Credit No. 1261 North China Plain Agriculture Project \$60 million credit
of June 23, 1982; Date of Effectiveness: October 7, 1982;
Closing Date: December 31, 1987.

Project civil works began immediately after credit signature and are well underway; the first supervision mission is in the field.

PEOPLE'S REPUBLIC OF CHINA
AGRICULTURAL EDUCATION AND RESEARCH PROJECT

Supplementary Project Data Sheet

Section I: Timetable of Key Events

- (a) Time taken by the country to
prepare the project : Four months
- (b) The project was prepared by : The Government and the Association
- (c) Date of first mission to
consider the project : July 1981
- (d) Appraisal mission : October 1981
- (e) Completion of negotiations : April 1982
- (f) Planned credit
effectiveness : February 1983

Section II: Special Association Implementation Actions

None.

Section III: Special Conditions

A. Conditions of Effectiveness

The State Council shall have approved the Project and the Development Credit Agreement.

B. Other Conditions

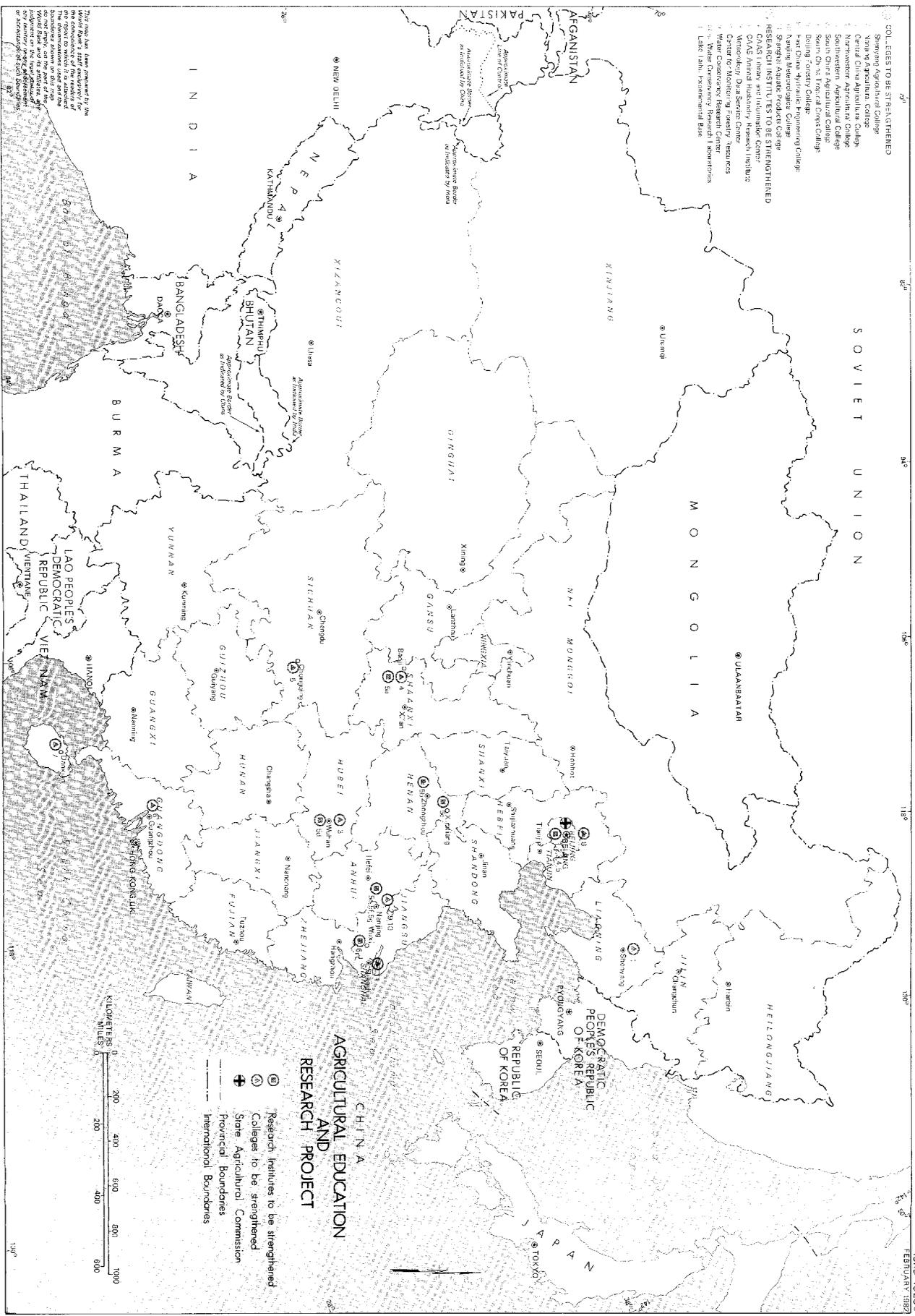
The Government would:

- (a) carry out language training for fellows and study tour participants in accordance with programs acceptable to the Association (para. 73);
- (b) select candidates for fellowships and training in accordance with selection procedures and criteria agreed between the Government and the Association (para. 85);

- (c) carry out studies, in accordance with terms of reference acceptable to the Association, of the agricultural manpower and agricultural research system and provide the Association with a summary and analysis of the findings (para. 79);
- (d) monitor and evaluate project progress using agreed project indicators and tracer surveys (para. 81); and
- (e) maintain the Project Office and Project Commission until the closing date of the project (paras. 82 and 84).

COLLEGES TO BE STRENGTHENED

1. Shenyang Agricultural College
2. Central China Agricultural College
3. Northeast Agricultural College
4. South China Agricultural College
5. South China Forestry College
6. Beijing Forestry College
7. Beijing Forestry Engineering College
8. Beijing Forestry University
9. Shanghai Aquatic Products College
10. Shanghai Aquatic Products Research Institute
11. Shanghai Institute of Horticulture
12. Shanghai Institute of Horticulture
13. Center for Nonwood Energy Research
14. Water Conservancy Research Institute
15. Lake Taih, Hydrological Base



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