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Report No. P-3086-CHA

REPORT AND RECOMMENDATION
OF THE
PRESIDENT OF THE
INTERNATIONAL BANK FOR RECONSTRUCTION AND DEVELOPMENT
AND THE
INTERNATIONAL DEVELOPMENT ASSOCIATION
TO THE
EXECUTIVE DIRECTORS
ON A
PROPOSED LOAN AND CREDIT
TO THE
PEOPLE'S REPUBLIC OF CHINA
FOR A
UNIVERSITY DEVELOPMENT PROJECT

June 1, 1981

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CURRENCY EQUIVALENTS

Currency Unit - Yuan (Y)

\$1.00 = Y 1.53
Y 1.00 = \$0.65

ACADEMIC YEAR

September 1 - August 31

FISCAL YEAR

January 1 - December 31

CHINA

UNIVERSITY DEVELOPMENT PROJECT

Project Summary

Borrower: The People's Republic of China

Amount of IBRD Loan: \$100 million

Terms: 20 years, including 5 years of grace, with interest at 9.6% per annum.

Amount of IDA Credit: \$100 million (SDR 81.4 million)

Terms: Standard

Project

Description:

The project would assist the Borrower to strengthen higher education and research in the fields of science and engineering. The project would provide civil works, furniture, equipment, specialist services, fellowships, and other related inputs to: (a) increase the number of graduates and the volume of research work at 26 leading universities; (b) raise the quality of graduates and research work at these universities; and (c) strengthen management at universities and the Ministry of Education. Since this would be China's first operation with the World Bank Group, delays in implementation might result from the Borrower's inexperience with Bank procedures. To help reduce this risk, the Bank and UNDP have assisted the Borrower in preparing specifications and tender documents. Furthermore, the project would strengthen the capacity of universities and the Ministry of Education to implement and manage future development projects.

<u>Estimated Cost:</u>	<u>Local</u>	<u>Foreign</u>	<u>Total</u>
	-----	(\$ million)	-----
<u>I. Science and Engineering</u>			
<u>Education and Research</u>			
(a) Enrollment expansion	-	1	1
(b) Teaching and research development	-	2	2
(c) Staff development	-	19	19
(d) Physical facilities	82	131	213
Subtotal	<u>82</u>	<u>153</u>	<u>235</u>
<u>II. Education Management</u>			
(a) Universities	-	2	2
(b) Ministry of Education	-	1	1
(c) Future investments	-	2	2
Subtotal	<u>-</u>	<u>5</u>	<u>5</u>
Baseline Costs	82	158	240
<u>Contingencies</u>			
Physical	4	8	12
Price	9	34	43
<u>Total Project Cost</u>	<u>95</u>	<u>200</u>	<u>295</u>

<u>Financing Plan:</u>	<u>Government</u>	<u>IBRD/IDA</u>	<u>Total</u>
	-----	(\$ million)	-----
<u>Items to be Financed</u>			
Civil works, furniture and associated professional services	55	-	55
Imported equipment	-	155	155
Locally manufactured equipment	30	-	30
Specialist services	-	5	5
Fellowships	2	25	27
Unallocated	8	15	23
<u>Total</u>	<u>95</u>	<u>200</u>	<u>295</u>

<u>Estimated</u> <u>Disbursements:</u>	<u>Bank FY</u>	<u>1982</u>	<u>1983</u>	<u>1984</u>	<u>1985</u>	<u>1986</u>
		----- (\$ million) -----				
	Annual	5	30	40	60	65
	Cumulative	5	35	75	135	200

ERR: NA

Staff Appraisal Report: No. 3366a-CHA, dated June 1, 1981.

REPORT AND RECOMMENDATION OF THE PRESIDENT
OF THE INTERNATIONAL BANK FOR RECONSTRUCTION AND DEVELOPMENT
AND THE INTERNATIONAL DEVELOPMENT ASSOCIATION
TO THE EXECUTIVE DIRECTORS
ON A PROPOSED LOAN AND CREDIT
TO THE PEOPLE'S REPUBLIC OF CHINA
FOR A UNIVERSITY DEVELOPMENT PROJECT

1. I submit the following report and recommendation on a proposed loan and credit to the People's Republic of China to help finance the University Development Project. The loan, for the amount of \$100 million equivalent, would have a term of 20 years, including 5 years of grace, with interest at 9.6% p.a. The credit, for the amount of \$100 million equivalent (SDR 81.4 million), would be on standard IDA terms. The grant element provided in this financing package, calculated on the basis of a 10% discount rate, would be 42%.

PART I - THE ECONOMY

2. An introductory economic report, entitled "China: Socialist Economic Development" (No. 3391-CHA), is being distributed to the Executive Directors separately. The following section is based on that report. Annex I contains a summary of country data.

Growth and Poverty Reduction

3. China's economic system combines a largely urban and state economy similar to that of other socialist countries with a rural commune economy of its own invention. Within this institutional framework, development efforts have 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.

4. Despite these constraints and despite some sharp policy oscillations, 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 40%) is currently similar to the average for middle-income developing countries. But because the share of services is much smaller than in other countries, agriculture still accounts for 34% of GDP and over 70% of employment, similar to the average for low-income countries.

5. Although by 1980 population growth was reduced to only 1.2% p.a. owing to successful family planning efforts, population expanded at about the same rate as in other developing countries from 1949-79. But despite this and despite the large weight of a tightly constrained agricultural sector, rapid expansion of industrial output (around 10% p.a. in 1957-79) has caused national income per person to grow quite fast. With adjustments for international comparability, per capita GNP appears to have grown at an annual rate of 2.5-3.0% in 1957-79. This is significantly above the average for other low-income developing countries (1.6% in 1960-78), though it is 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.

6. Because the system has been very effective at mobilizing domestic savings (at 1970 prices, the marginal saving rate in 1957-79 was over 40%), consumption has grown more slowly than income. In real terms, per capita consumption is estimated to have risen at an annual rate of about 1.9% in 1957-79, but (because of a spurt in the last two years) at only about 1.3% in 1957-77 - barely above the average for other low-income countries (1.2% in 1960-78).

7. Nonetheless, and although rural poverty remains a matter of serious concern, China's most remarkable achievement during the past three decades has been to make low-income groups far better off in terms of basic needs than their counterparts in most other poor countries. They all have work; their food supply is guaranteed through a mixture of state rationing and collective self-insurance; most of their children are not only at school, but are being comparatively well taught; and the great majority have access to basic health care and family planning services. Life expectancy - whose dependence on many other economic and social variables makes it probably the best single indicator of the extent of real poverty in a country - is (at 64 years) outstandingly high for a country at China's per capita income level (\$260 in 1979).

Adjustment and Reform

8. 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 depend mainly on improving the efficiency of resource use, rather than on (as in the past) massive mobilization of resources and fundamental institutional change. 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.

9. One focus of the debate has been criticism of the economic system. Its record in mobilizing physical and human resources, and in reducing

serious poverty, is outstandingly good. But the state economy is inefficient both in converting inputs (especially capital and energy) into output and in matching supply with demand. Both problems have been aggravated in China by the virtual absence of medium-term planning since 1958, by technical weaknesses in annual planning and project appraisal, by the difficulty of achieving an appropriate balance of responsibilities between central and local government, and by prolonged inattention to such economic instruments as prices and loans - all of which have been partly the result of political turmoil. The commune economy, though fundamentally an efficient system, has been periodically handicapped because it has not always received optimal instructions from above and by dilution of production team autonomy in production and income distribution decisions.

10. These shortcomings have prompted a set of reforms aimed at providing lower level units with more freedom of maneuver, stronger incentives, and better signals. Since 1980, a formal revenue-sharing system has given provincial governments somewhat more incentive and opportunity to increase revenues, reduce waste, and tailor expenditures to local needs. Many state enterprises are now allowed to retain around 10% of their profits, and to use this money to pay bonuses, improve worker amenities, and modernize and expand their capacity. They have also been given a little more control over what they produce; and the scope for private and collective production in urban areas has been enlarged. To supplement and stimulate the state's unified distribution system, the number and variety of commercial channels has been increased, and joint ventures that cut across traditional administrative boundaries are now encouraged. The management of foreign trade - which has been expanding rapidly in the 1970s, after virtual stagnation in the 1960s - has been somewhat decentralized, and a number of initiatives have been taken to expand exports.

11. Linked with the diversification of commerce has been some increase in the freedom of producers and traders to alter product prices. Several moves away from the past practice of providing capital free of charge have also been made: most notably, budget allocations for much fixed and inventory investment are now in the form of interest-bearing loans. But there has been little change in the wage and labor allocation systems. In the commune sector, the role of the production team is being enhanced, and the linkages between individual effort and reward are being strengthened. Rural marketing arrangements are being diversified, and emphasis is being placed on exploitation of local comparative advantage and on indirect planning through procurement price adjustments.

12. Though their implementation has not been free of problems, these reforms are well focused on important weaknesses of the Chinese system of economic management. There are four (interlinked) areas in which further reform deserves serious consideration: the price system; investment decisions; foreign trade management; and labor allocation. But without more effective planning - of macroeconomic variables and major investments - many of the prospective benefits of reform will be lost.

13. It is now felt in China that too low a priority was given in the past to raising living standards, and in particular that both the overall investment rate and the share of heavy industry in production and investment have been too high. The Government has accordingly taken steps to raise the share of consumption in aggregate demand and the share of consumer goods in aggregate production. It planned to reduce the share of investment in budget expenditures, and to spend more on housing, education, health, agriculture and light industry. Urban workers received promotions and bonuses which, in conjunction with employment creation, raised the wage bill between 1977 and 1980 by about 50%. Agricultural procurement prices were raised by an average of 36% between 1977 and 1980; this raise was only partly passed on to urban consumers. Agriculture and light industry have been favored in the allocation of materials, fuel and power, credit and foreign exchange.

14. In important respects, these measures achieved their objectives. In the three years from 1977 to 1980, in real terms, agricultural output rose by 22%, light industrial output by 44% (much more than heavy industry's 26%), and total net material product by 28%. Real consumption per capita increased between 1977 and 1979 by over 17%, with a considerable further increase between 1979 and 1980.

15. In other respects, the measures were less successful. The Government miscalculated their effects on the budget and on the balance between aggregate supply and demand, partly because it failed to achieve the planned reductions in investment (both within and outside the budget). There were large unplanned budget deficits in 1979 and 1980, coupled with strong inflationary pressure that was only partly suppressed by the price control system.

16. This led in early 1981 to a switch in emphasis from medium-term adjustment to short-term stabilization. Price controls have been stiffened. On the demand side, the Government proposes to ease the pressure on resources by slashing state capital construction expenditure from around Y 50 billion in 1980 to Y 30 billion in 1981. Efforts are also being made to ease some critical constraints on expansion of domestic production - most notably energy and agricultural raw materials for industry. Inputs in short supply are to be channelled to the most efficient plants, and the least efficient are to be closed down, while the cuts in industrial investment are to be focused not only on heavy industry (with the exception of energy and building materials), but also on projects that would aggravate existing shortages of energy and materials.

Prospects and Options in the 1980s

17. The current problems underscore the need to restore and improve economic policy making. But the need for better medium- to long-term planning is especially urgent because the Government's drive to improve living standards will, in the coming decade, be subject to a tight set of interlocking

constraints. Some of these are of long standing - agricultural land, foreign exchange, trained manpower. Others are more recent - domestic energy production and financial resources for new investments (which are being squeezed between the Government's desire to reduce the saving rate and the claims of an enormous existing investment program). In many respects, however, the future looks promising: population growth is slow; better economic management and system reform could substantially increase efficiency; and access to foreign markets, technology and capital is much improved. The challenge is therefore to harness this promise to ease the constraints on growth.

18. Although aware of the difficulty of this task, the Government has not yet determined a detailed course of action for the medium term (the next five-year plan is currently in preparation, but unlikely to be completed before late 1981). Key issues can be identified, however, in (a) population and human resources, (b) agriculture, (c) energy, (d) industry, and (e) foreign trade and borrowing.

Population and Human Resources

19. Largely because it is already very low, the birth rate is likely to fall only gradually from now on. But if the vigorous birth planning campaign is continued, population growth from 1980 to 2000 can probably be maintained at its current low level of 1.2% per year. This will ease pressure on foodgrain supplies; it will be associated with a decline in the relative size of the school-age population, which will permit improvements in the quality and coverage of education; and in the 1990s, it could cause the absolute size of the agricultural population to decline, which would widen the range of rural development options. In the 1980s, however, the working-age population will continue to grow at nearly 2% per year: it will be difficult to provide a commensurate volume of additional productive employment.

20. In health and nutrition, the current level of achievements and fiscal constraints together dictate a selective approach in the next decade. Some general improvements in the health care system could be effected at low cost; but the most urgent need is to consolidate the gains that have already been made, and to extend some state support to the poorest rural areas (both for reasons of equity and to strengthen the birth planning program). In nutrition, efforts should likewise be concentrated on bringing the poorest groups closer to the average.

21. In education, the highest priority is to repair the damage done by earlier neglect and political upheavals to the supply of high- and middle-level technical manpower. The Government accordingly plans to double university enrollment by 1990, as well as to improve its quality (see Part III below). This should be supplemented by rapid expansion of the already

impressively developed system of nonformal tertiary education. The Government also proposes a major expansion of technical and vocational schools: but this will require improvements in curricula and in linkages with prospective employers, and it will be slowed by a shortage of qualified teachers. Planned improvements in the quality of primary and secondary schooling are to some extent necessary for the expansion of advanced education. But both these improvements and planned increases in primary and secondary enrollment will, for financial reasons, probably have to be stretched over a longer period than is currently envisaged.

Agriculture

22. The problems facing agriculture in the 1980s are similar to those in the past. On the demand side, foodgrain production and food security will continue to require high priority, especially because the food intake of a substantial minority of the population remains barely adequate. But competition for land will be sharpened by the new emphasis on raising living standards, which will require relatively greater supplies of both higher quality foods and agricultural raw materials for light industry.

23. As regards supply, the amount of land per worker has shrunk, and some of the factors that have raised yields remarkably rapidly in the past are unlikely to help so much in the future. The rate of expansion of the irrigated area will be slower; there is less scope for switching from low-yielding to high-yielding crops; and tight energy supplies will limit the rate of increase in the use of chemical fertilizer and other agricultural chemicals. Moreover, although there is no shortage of machinery, there are only limited opportunities for using it to increase yields rather than displace labor (although the latter might be desirable where working hours are currently very long).

24. On the positive side, however, substantial gains will probably be realized through improved policies and management. Especially important is the Government's present emphasis on stronger incentives and more producer autonomy, on greater specialization of output mix in line with local comparative advantage, and on agricultural research. Similarly, the effectiveness (including the nutrient balance) of the large amounts of chemical fertilizer that are now being applied could be substantially improved through local fertilizer trials and soil analysis, while upgrading of older irrigation systems and drainage programs in areas of salinity could also significantly increase production. The scope for improving average yields in maize and other coarse grains seems considerable, while average wheat yields (considering that the crop is largely irrigated) are still moderate; and for most crops, average yields could be raised appreciably by advances in the technically more backward parts of the country. Thus, output of grain could grow in the 1980s at 2.0-2.5% per year. Total agricultural output should grow somewhat faster, probably at around 3% p.a.

25. Measures to increase agricultural efficiency, growth of commune industry, and even (since many of them are net purchasers of food) increased agricultural prices will do least for the poorest rural groups, whose relative incomes could decline. To counteract this, increased state support for poor areas is needed to promote the development of agriculture and nonagricultural activities, and to provide more food and better social services. This, like general increases in agricultural prices, could be financed in part by progressive taxation of agricultural income or land. And in cases where it would be cheaper than raising their incomes on the spot, the rural poor should gradually be allowed to move to other areas. In addition, the rural poor might benefit from long-term regional development plans: these could address the special problems of particular localities, focus money and manpower on them, and promote coordination among different government agencies.

Energy

26. The outlook for domestic energy production has recently deteriorated. Total primary energy production in the 1980s will not grow much faster than 2.8% p.a., with the growth rate in 1980-85 unlikely to exceed 2.2% - less than one quarter of the 1952-80 growth rate. In the latter half of the 1980s, there is more room for maneuver, especially in electricity generation. But the energy sector is already absorbing over 40% of industrial investment; and the capital outlays that would be required in the first half of the decade to markedly accelerate the growth of energy output in the second half, even if feasible in terms of specialized manpower and equipment, would be so large as to crowd out vital investment in other sectors.

27. Prospects for economic growth in the 1980s thus depend critically on reducing energy use per unit of output. This is doubly important in the case of oil, whose availability for use as an industrial raw material will also fundamentally influence growth prospects. Moreover, because agriculture, commerce, households and transport are lesser users of energy, with relatively limited scope for conservation and inter-fuel substitution, the outcome will depend mainly on what is achieved by industry (including the energy sector itself).

28. Altering the balance between heavy and light industry in favor of the latter has already contributed to a significant reduction in energy use, and it will continue to do so until the middle of the decade. Of greater and more enduring importance, though, will be cuts in energy use, and substitution of coal for oil, within industrial subsectors - especially in heavy industry, which accounts for about 60% of national commercial energy use. Substantial savings could be obtained at negligible cost by minor operational improvements. Further savings, and substitution of coal for oil, could be achieved at moderate cost by limited equipment and technology improvements, including the replacement of many industrial boilers. Beyond that, major changes in some processes are called for; and in certain

industries (most notably metallurgy), it will be both desirable and feasible to eliminate most small plants.

29. These measures could very substantially reduce energy use per unit of industrial output, at a capital cost far less than that of achieving an equivalent increase in energy supply. But to accomplish this will require thorough advance planning in each of the major subsectors, and the integration of energy conservation with other aspects of industrial restructuring and modernization. It will also require reform of energy allocation procedures. And it would be greatly facilitated by changes in energy prices (especially a large rise in the price of fuel oil), in conjunction with further reforms to increase the incentive effect of prices on users.

Other Industrial Issues

30. Industrial expansion in the next few years may be constrained not only by energy, but also by raw materials, foreign exchange, and finance for new investments. But in a broader sense, and over the longer term, the performance of the industrial sector - in economizing on energy, materials and capital, in earning foreign exchange, and in technological innovation - will itself largely determine the extent to which the main constraints on economic growth can be eased.

31. Expansion of light industry is already being held back by shortages of raw materials - industrial (petrochemicals and appropriate metals) as well as agricultural. These could be eased by restructuring the metallurgical industry and expanding the petrochemical-based industries, while substituting coal for oil to supply the needed feedstock. But the domestic supply of agricultural raw materials and oil will remain tightly constrained. Increased imports are thus both necessary and desirable. The situation could also be improved by further reforms to give stronger financial incentives to economize on material use, by eliminating inefficient plants, and by shifts in industrial structure toward subsectors that are less raw material intensive (most notably electronics). Economy in the use of industrial capital will also be essential if sustained rapid growth is to be reconciled with a reduced aggregate investment rate and higher investment in nonproductive sectors.

32. Given the shortage of foreign exchange, and the knowledge to be gained from exposure to world markets, expansion of manufactured exports must have high priority. The outlook is promising, given the abundance of skilled low-wage labor and the enormous potential for economies of scale. At present, moreover, China's manufactured exports are only 3% of gross manufacturing output, and less than 6% of total developing country exports of manufactures. But three fifths of China's manufactured exports now consist of products other than machinery or equipment sold to developing

countries or European socialist countries. To achieve rapid growth, China must therefore increase its currently very small share of the richer markets, especially in the OECD.

33. On this basis, and provided that there is sustained expansion of world economic activity and trade, China's manufactured exports could grow in the 1980s at a real rate of about 10% p.a., and quite possibly 15%. But this would require appropriate policies in China: exporters will need to be given greater freedom to import materials and components; administrative procedures should be streamlined; and, most importantly, Chinese producers should be allowed to establish sustained and direct contact with foreign buyers - not least to assist them in improving product design.

Foreign Borrowing Options

34. Despite a real increase of 40-50% between 1977 and 1980, China's exports - \$18 billion in 1980 - remain only 6-7% of GNP. In 1980, energy (mainly oil) accounted for about a quarter of the total, and manufactures for about two fifths, the remainder being primary (mainly agricultural) products. Oil exports will almost certainly decline in volume and could disappear by the end of the decade, while slow agricultural growth will restrict primary export expansion to at best 4-5% p.a. Thus manufactured exports will have a critical influence: if they grow at a moderate pace (10% p.a.), total foreign exchange earnings would expand in real terms by about 5% p.a. over the decade; if they grow fast (15% p.a.), total foreign exchange earnings could expand at more than 8% p.a. over the decade.

35. The need for imports will be great. Even if energy conservation is highly successful, substantial imports of other raw materials will soon be required to maintain a rapid rate of industrial growth. Pressure to increase consumption and constraints on agricultural production are unlikely to permit any reduction of food imports. And a well-chosen program of capital goods imports could make a major contribution to modernization and the easing of constraints on growth in many sectors.

36. Faced with these constraints and needs, the Government is giving serious but cautious consideration to the possibility of a substantial expansion of external borrowing (as well as of direct investment and similar arrangements).

37. At the end of 1980, total external debt outstanding is estimated to have amounted to only \$3.4 billion, of which perhaps \$200-300 million was official credits, and the rest export and supplier credits, deferred import payments and commercial bank loans. China has in recent years been able to attract large loan commitments on market terms - about \$14 billion in officially guaranteed export credits, and a relatively small amount in short- and medium-term commercial bank credits - although very little of this has thus far been drawn down. By contrast, China's access to concessionary

official capital is limited. The cumulative total commitments of concessionary official capital at the end of 1980 were only about \$500 million, with the largest amounts from the Japanese Overseas Economic Cooperation Fund and much smaller amounts from Belgium.

38. The Government's external borrowing decisions will and should be influenced by the terms on which foreign capital is available. One reason for this is the need to keep the debt service ratio low enough to maintain creditworthiness. With a moderate increase in borrowing (net resource inflows in 1980 prices rising from \$1.2 billion in 1980 to \$2.7 billion in 1990), moderate export growth would cause the debt service ratio to be about 10% in 1995, even if the terms of borrowing were on average rather hard (75% on commercial terms). With high borrowing (net inflow of \$6.8 billion in 1990) on the same hard terms, and only moderate export growth, the debt service ratio would rise by 1995 to 24% - well above the level of 15% that the Government has indicated as an upper limit. But high export growth or somewhat softer terms (50% on commercial terms) could reduce the debt service ratio in the high borrowing case to 14% and 18% respectively - and the combination of the two could keep it to 10%. These projections all assume that energy conservation is highly successful; if it were not, China's ability to service external debt would be reduced, both because foreign exchange earnings would be less and because a higher proportion of foreign exchange earnings would be pre-empted by essential imports such as oil and grain.

39. The other important influence on the Government's borrowing decisions in the 1980s will be the value of the additional resources obtained in relation to the real cost of borrowing. In the long term, this is essentially a matter of the marginal real return on domestic investment in relation to the expected real rate of interest on external debt. But in the nearer term, in China's current situation of disequilibrium and adjustment, it will also be appropriate to consider the prospective benefits from fuller use of installed capacity (where this would otherwise be constrained by the availability of fuel, materials and spare parts) and the damping effects of increased imports on domestic inflation.

40. Within the past year, the Government has addressed the relationship between the cost of foreign borrowing and the returns to investment, and has cancelled import contracts for several large investment projects - some of which were extraordinarily ill-prepared, even in engineering terms. These cancellations have caused problems with potential suppliers, and financial penalties may have to be paid. Nonetheless, the apparently difficult decisions to cancel ill-prepared projects indicate that the management of foreign trade and capital may in future be based on economic considerations - a change that should be welcomed by potential exporters and lenders to China. Looking further ahead, some key determinants of the optimal level of China's foreign borrowing, including the rate of growth of manufactured exports and the efficiency with which capital and energy are used, ultimately depend on reform of the economic system and improvement of economic management. But foreign borrowing itself could contribute significantly to the improvements in efficiency that are needed to accelerate growth in the next decade.

PART II - BANK GROUP OPERATIONS IN CHINA

41. The relationship between China and the Bank developed rapidly after China's change of representation in the Bank in May 1980. In July 1980, agreement was reached with the Government on the preparation of a major economic study, which would assess China's past development performance, economic system and future prospects to provide the analytical basis for Bank operations; at the same time work began on a limited initial operations program of projects in education, agriculture, transport and energy to facilitate an early commencement of lending.

42. In late 1980, a large economic mission, which included sector teams on agriculture, industry, education, transport and energy, visited China. Its members travelled widely and received full cooperation from government agencies at all levels. The mission's report (including a main report, a statistical annex and seven sector annexes) was reviewed with the Government in May 1981 and is now before the Executive Directors.

43. The findings of the economic mission and the initial dialogue with the Government indicate that the Bank should pursue several basic objectives in its economic and lending work. The Bank should assist the Government in its efforts to: (a) improve macro and sector planning and investment criteria, as well as the managerial and financial performance of institutions, as part of the country's general effort to increase the efficiency of resource use; (b) achieve better utilization of existing productive capacity and human resources, and quick production increases, required for the adjustment of the economy; (c) remove critical constraints to longer term development, e.g., in energy, education and transport; and (d) import foreign technology, through both direct technical assistance and project lending.

44. Following the review of the economic report with the Government in May 1981, agreement was reached on a work program for the Bank's technical and financial assistance in the next few years. In energy, the Government has expressed interest in Bank assistance for enhanced oil recovery from existing fields and on-shore petroleum development, coal mining, and power generation. In industry, the Bank would assist in energy conservation, training, selective rehabilitation of large enterprises, and the establishment of financial intermediaries as channels for smaller scale investments. In agriculture, the Bank would support irrigation, cash-crop development, training and research, and development of credit facilities. In education, the Government has expressed interest in continued Bank assistance in university development, and in developing general education through mass media (TV universities), vocational and technical training, adult education, and teacher training. Finally, in transport, the Bank expects to finance port improvement programs and might assist in developing highways and inland waterways. In most of these areas, work on projects would be preceded by economic and sector studies. The Bank is therefore planning a substantial program of economic work for the coming years.

45. Bank project missions have worked closely with various line ministries and provincial and local agencies such as universities and port authorities. In addition to the University Development Project, work has so far been carried out mainly on two other projects of the initial operations program: an agriculture project and a port modernization project. The proposed agriculture project would focus on reducing soil salinity in the lower Huang He (Yellow River) area through irrigation and drainage and provide agricultural support services. Under the proposed port project, container and coal terminals of the ports of Guangzhou, Shanghai and Tianjin would be modernized and expanded to meet the demands of increasing bulk cargo and container traffic.

46. The Government attaches great importance to Bank assistance through the Economic Development Institute (EDI) in the field of training. A major training program has been developed by EDI with a Chinese counterpart institution. In late FY81, EDI conducted a general Project Planning Seminar in Washington for about 30 senior Chinese officials, to acquaint them with the concepts of investment analysis and the operating procedures of various international institutions. A Project Planning Course will be offered for approximately 30 mid-level officials in Shanghai in early FY82. During FY82, five additional courses for senior and middle-level officials will be offered by EDI and will focus on: power projects; transportation; national economic management; regional development planning; and general project planning.

47. Progress has been made on developing the institutional framework for cooperation between the Government and the Bank. The three main counterpart agencies are the Ministry of Finance, the State Planning Commission, and the State Capital Construction Commission. A high-level Steering Group, comprising senior officials from the Ministry of Finance, the State Planning Commission, the State Capital Construction Commission, the Ministry of Foreign Affairs, the Ministry of Foreign Trade, the Bank of China and the People's Bank of China, has been established to coordinate all World Bank, IMF and bilateral loan operations.

48. A World Bank Division has been set up in the Ministry of Finance; it consists of four offices and will have a staff of about 20 professionals. A Loan Projects Office with five divisions has been set up under the auspices of the State Foreign Investment Control Commission, to deal with Bank projects and Japanese and other bilateral loans. Staffing has just begun. The role of this office is to coordinate, together with the Steering Group, project activities of the various line ministries and assist in developing standard procedures (in such areas as project design, procurement of equipment and contracting of civil works) for the implementation of Bank projects.

PART III - SCIENCE AND ENGINEERING EDUCATION AND RESEARCH

The Role of Science and Technology in Development

49. The underdevelopment of science and technology has impeded China's ability to utilize its human and natural resources effectively. Progress in these fields has been limited and sporadic due to periodic reversals in the Government's development policy. Technological progress slowed with the start of the Great Leap Forward (1958-60) and was further interrupted by the onset of the Cultural Revolution (1966-76). The latter, with its overemphasis on self-reliance and discrimination against intellectuals, isolated China from the outside world, with the result that in science and technology China is now many years behind technologically advanced countries.

50. China's long-term development objective is to make substantial progress towards reaching the technological level of these countries by the year 2000. While advances will be sought in several fields - agriculture, industry, defense, and science and technology - progress particularly in the latter is recognized as crucial to achievement of the overall objective.

Higher Education and Research

51. Higher Education. While primary and secondary school enrollment ratios have grown rapidly in China and now significantly surpass those in other developing countries (e.g., 47% compared to about 26% in secondary education), the enrollment ratio in higher education has declined from 1.6% in 1958 to 1.2% in 1979. The corresponding ratio is 5% in other developing countries. Neglect of the higher education system and political upheavals have caused this decline.

52. In 1979, undergraduate programs enrolled 1,020,000 students but that year only 85,000 students graduated (an effect of earlier university closures during the Cultural Revolution). Science and engineering programs have enrollments of 70,000 and 345,000 students (7% and 34% of the total) respectively; their output in 1979 was 6,000 science and 21,000 engineering graduates. The number of students in graduate education is much lower. Between 1949 and 1966, an average of only 1,500 students per year completed some form of graduate study, usually a one- or two-year apprenticeship to a professor. By 1979, 15,500 students were receiving graduate training.

53. Education policy in China is formulated by the Central Committee of the Chinese Communist Party in cooperation with the State Council. The Ministry of Education is responsible for preparing annual and long-term plans and coordinating higher education through control of curricula, textbooks, and recurrent budgets. However, the day-to-day administrative responsibility for higher education is divided among the Ministry of Education, various other ministries of the central government, and provincial and municipal governments.

54. The 633 institutions of higher education in China comprise two types: comprehensive universities, and specialized colleges and institutes. To improve the quality of education in the short term, 97 institutions (15% of the total) have been designated as key institutions and will receive a relatively large share of resources. The key institutions are particularly important in the fields of science and engineering. They enroll 45% of science students and 66% of engineering students and produce 56% and 70%, respectively, of graduates in these fields. They also enroll about 70% of all graduate students.

55. Research. Policy related to scientific and technological research is also formulated by the Central Committee of the Party in cooperation with the State Council. The State Commission of Science and Technology is responsible for overall planning and coordination of research. Administrative responsibilities are carried out by various levels of government: central, provincial, municipal, district, county and commune.

56. About 6,000 institutions (including universities) and 420,000 staff are involved in scientific and technological research throughout the country. Around 1,000 institutions are considered key centers. The research centers at universities serve the needs of faculty for teaching and experimentation and, on a limited basis, provide services to other educational institutions, government agencies and industry.

Issues in Science and Engineering Education and Research

57. Two major constraints on technological modernization are: an acute shortage of well-trained science and engineering manpower, and the absence of active research in these fields. There are three main weaknesses in the ability of the present science and engineering education and research system to overcome these constraints: (a) low output in terms of the number of graduates and the volume of research; (b) poor quality of graduates and research work; and (c) the weakness in management of higher education and its associated research activities. Accordingly, there is a pressing need to increase the output of graduates from the system in these fields (as in others) and to improve the quality of their education. The expansion of manpower is necessary for, and must also be accompanied by, an increase in China's indigenous research and development capacity in science and engineering. The capacity of the higher education system to conduct such research should therefore be expanded.

58. Projections of high-level manpower needs indicate that China will require an average annual increment of 27,000 scientists and 61,000 engineers over the next decade. The present output of the higher education system meets only about 20% and 35% of the estimated needs in science and engineering, respectively. The low output from the system stems largely from constraints on enrollments due to inefficient use of university staff and facilities. Teacher work loads are about half what they are in many other countries and student/staff ratios average 4:1. Inappropriate scheduling has resulted

in space utilization rates of 30-40% in China's universities, compared to desired rates of 60-80%, depending on the type of facilities. The low output of research work in science and engineering is largely due to the neglect of graduate programs.

59. The poor quality of science and engineering graduates and research work can be attributed to the inadequacy of teaching and research programs, staff quality, and laboratory equipment.

- (a) Teaching and Research Programs. Undergraduate programs are inflexible and unbalanced; few electives are allowed within a major, and there is little opportunity for specialization within a field. At the same time, curricula place emphasis on lecture courses and devote little time to practical work. Prior to 1980, there were no formal teaching programs at the graduate level, and universities had no coherent research programs. Most research was done on an ad hoc basis in response to requests by the Chinese Academy of Sciences and by industry, which are the major sources of research funds and provide financing for specific projects in line with their own needs. Applied research is often favored over basic research.
- (b) Staff Quality. Only about 5% of the total staff have had six years or more of higher education (compared to 50% of the staff of major universities in other Asian countries). Furthermore, these better trained staff average about 70 years of age and will need to be replaced in the near future. The low level of training is compounded by China's long isolation from developments in other countries, as well as by the lack of opportunity for teaching staff to benefit from progress made within China (due to the minimal mobility of staff between universities).
- (c) Laboratory Equipment. At the undergraduate level, too little equipment is available and for some experiments in the syllabi, none at all. At the graduate and research level, the equipment that does exist was mostly manufactured in the 1940s and 1950s and is largely obsolete.

60. The factors contributing to the low output and poor quality of education and research are closely linked to weaknesses in the management of higher education at both the university and Ministry of Education levels. University management has limited capacity to schedule space and staff efficiently, to keep accurate student records, and to maintain accounting records or budgets on the basis of programs. At the Ministry of Education level, weaknesses lie in poor collection and processing of education statistics, in program budgeting and in evaluation.

Government Strategy and Plans

61. The Government plans to increase the output and improve the quality of higher education and research. Undergraduate enrollment is to increase

by 7% p.a., reaching 2.2 million students in 1990 and producing 4 million graduates during the 1980s. Graduate programs will increase their enrollments to 200,000 by 1990 and produce 100,000 graduates in the 1980s. To reach these goals, the Government plans to: (a) increase internal efficiency at all higher education institutions; (b) strengthen regional universities; (c) establish a system of polytechnics and colleges; (d) increase access by adults to higher education, through greater use of educational television and correspondence courses; and (e) strengthen education in the social sciences and business administration.

62. As a first phase of its plan, the Government intends to develop science and engineering education at 26 of the key universities, selected on the basis of the size of their enrollments in these fields, the strength of their faculty and their location. About 75% of enrollment in these universities is in science and engineering, compared to the national average of 40%. Their graduate programs enroll about 30% of all graduate students. About 7% of their staff have had six or more years of higher education, compared to 5% in the system as a whole. Finally, they are located in major cities or in areas where industry and commerce are active. Enrollment increases will be accomplished by improved utilization of space and staff. Quality improvements will be achieved by strengthening teaching programs at the undergraduate level, introducing new programs at the graduate level, and developing coordinated research programs.

External Assistance

63. External assistance to higher education has been limited to minor amounts since aid from the USSR was terminated in the 1950s. Since 1976, the major assistance to universities has come from the Federal Republic of Germany, which provided DM 1.0 million (\$443,000) of laboratory equipment for Tongji University in Shanghai. Some multilateral aid is being provided by the UNDP, while bilateral cooperation has primarily taken the form of fellowship programs and exchange of scholars.

PART IV - THE PROJECT

Objective and Scope

64. The proposed project would support the first phase of the Government's program to strengthen higher education and related research activities, by helping to increase the output and quality of teaching and research in science and engineering. It is designed to help overcome existing problems in science and engineering education and research, as well as to rectify weaknesses in management at the university and Ministry of Education levels, which compound these problems. The project would provide civil works, equipment and technical assistance to: (a) increase the number of graduates and the

volume of research work at the 26 universities selected by the Government, by improving utilization of staff and space, and developing graduate programs; (b) raise the quality of their graduates and research work, by strengthening teaching and research programs, improving staff quality, and modernizing laboratory equipment through the development of 46 laboratory centers comprising: (i) 20 specialized laboratories in various fields of science and engineering; (ii) 13 analytical and testing laboratories; and (iii) 13 computer centers; and (c) improve management at the university and Ministry of Education levels, by introducing better record keeping, program budgeting and improved statistics.

Expansion of Output

65. Staff and Space Utilization. The project would help to increase enrollment in science and engineering at project universities from 92,000 to 125,000 by promoting more efficient use of existing staff and facilities. Teaching loads and space utilization are at about 50% of desirable levels. The registrar's offices and relevant academic departments of five project universities (i.e., Beijing, Qinghua, Fudan, Nanjing and the Huazhong Institute of Technology) would develop and test techniques and procedures to improve staff and space utilization; specialist services and fellowships would be provided under the project to assist the universities. As a result of improved scheduling techniques, it is expected that the average teaching work load would increase to 8-12 hours per week, and utilization of classrooms to 60-80% and that of lecture halls and laboratories to 50-70%. An understanding was reached with the Government on the above-mentioned efficiency targets and on implementation schedules for work by the five universities. An understanding was also reached that if these procedures and techniques proved feasible, they would be introduced at the remaining project universities to help them achieve the planned enrollment expansion.

66. Graduate Programs. To assist in increasing the volume of research output, the project would aid in the development of formal graduate programs. Specialist services would be provided to help establish master's degree programs in science and engineering, particularly in the specialized areas of physics, chemistry, engineering, and computer science and its applications. The Government and the Bank reached an understanding on two targets for 1984/85: that a minimum of 50 graduate programs would be established at the 26 universities, and that the number of graduate students at these universities would be increased from 6,000 to about 10,000.

Improvement of Quality

67. Teaching and Research Programs. The project would help improve undergraduate science and engineering teaching programs, establish curricula for graduate programs, and develop more coordinated research programs. Undergraduate curricula would be improved to provide a more flexible and balanced program. Curricula for master's programs would be prepared to comprise lecture and research components at a ratio of about 3 to 1, and to reflect

specialities and strengths of individual project universities. A coordinated research program would be developed to focus on a few long-term projects in relevant fields. To accomplish this, the project would establish a review commission of 20-25 Chinese experts, whose work would be supported by an advisory panel of foreign experts, consisting of a chairman and four co-chairmen in chemistry, physics, computer science and engineering. Each of the panelists would visit China for an average of two months per year for four years. In coordination with the Ministry of Education, the panel would help identify and coordinate the work of specialists who would visit universities and help develop curricula, especially for new graduate programs. The services of the panelists and the specialists would be financed under the project. The Government and the Bank agreed that the members of the review commission, and a chairman and four co-chairmen of the advisory panel would be appointed by November 30, 1981 (draft Loan and Development Credit Agreements, Sections 3.06 and 3.07). An understanding was reached with the Government that by December 31, 1982, the project universities would publish a booklet on existing graduate programs in science and engineering and a plan for future development, including research areas for advanced degree course work.

68. Staff Development. The project would improve the quality of science and engineering staff at the 26 universities by providing 800 overseas fellowships, totalling 1,250 man-years. These fellowships would last approximately one to three years and would increase the proportion of staff at the project universities who have six or more years of higher education from 7% to 10%. Fellowships would be awarded according to existing government procedures and criteria agreed between the Government and the Bank. Before departure, fellows would be trained in the appropriate foreign language. The fellowship program would be managed by the Ministry of Education, with the assistance of university departments and the advisory panel. The Government and the Bank reached an understanding on the fellowship programs and on schedules to implement them and to conduct foreign language training courses for selected fellows. Assurances were obtained that candidates for fellowships and training would be selected in accordance with procedures and criteria satisfactory to the Bank and that the language training programs would be implemented on schedule (draft Loan and Development Credit Agreements, Sections 3.08 and 3.09).

69. In addition, staff improvement would be sought by promoting inter-university mobility for both staff and students. Accordingly, an understanding was reached between the Government and the Bank that, by 1984/85: (a) 5-10% of science and engineering professors and associate professors at project universities would be exchanged for a semester or longer among all universities; and (b) about one fourth of admissions for graduate programs in science and engineering at a project university would be selected from among candidates not studying at that university.

70. Laboratory Equipment and Centers. The project would also improve the quality of training and research by providing equipment and facilities for laboratories used for practical training in undergraduate courses and for

graduate training, research and services (i.e., at the 46 laboratory centers that the Government plans to establish under its development program). Equipment for undergraduate education would be installed in relevant departmental laboratories; the Government is renovating existing facilities or constructing new buildings to house the centers. The centers would be managed and staffed by members of academic departments. Master equipment lists for both types of laboratories have been finalized.

Strengthening of Management

71. University Management. The project would seek to rectify management weaknesses at the university level by introducing new techniques and procedures in scheduling staff time and use of facilities, operating libraries, record keeping, and program budgeting. These procedures would be introduced on an experimental basis at five project universities. Programs judged successful by the Government would be extended to the remaining project universities. In addition, the administration of computer centers at 13 project universities would be strengthened. The management improvement program would be administered by the vice-president for administration, assisted by the registrar and the senior financial affairs officer and their staff. University staff would be assisted by foreign specialists and fellowships for study abroad. The specialists would visit the universities during the early part of project implementation to help establish the experimental programs and identify particular needs for study abroad.

72. Ministry of Education Management. The project would provide technical assistance to help improve the capacity of the Ministry of Education in the collection and use of education statistics, program budgeting, monitoring and evaluation, and preparing for future sectoral investments. Improvements would be made in procedures for collecting statistics and in methods for compiling and analyzing data; these benefits would extend also to secondary and primary education. The Ministry of Education's accounting system would be expanded to include program budgeting techniques similar to those to be developed at the five selected universities. The monitoring and evaluation capabilities of the Ministry of Education would be improved through technical assistance. Also, to assist future development of the education sector, the project would help prepare for investments by supporting studies related to: the second phase of the Government's higher education development plan; the establishment of a polytechnic system; teacher training, curricula and instructional materials development; university training by means of television; and agricultural education and research.

Project Management and Implementation

73. The main responsibility for project implementation would rest with the Ministry of Education. The Vice-Minister for Planning and Development of Education would be in charge of implementation and would be assisted by two recently appointed project coordinators. These coordinators would be

supported by the relevant sections of seven bureaus in the Ministry (Planning, Science and Technology, Production and Supply, Capital Construction, Foreign Affairs and the two bureaus of Higher Education). The Ministry of Foreign Trade would assist the Ministry of Education in procuring foreign equipment.

74. At the university level, development plans for each project university would be prepared under the auspices of a senior management committee at that institution. Details of the plans would be prepared by existing development offices, assisted by the relevant university departments and by the proposed advisory panel and review commission. The development offices would also appoint all civil works and furniture contractors, supervise their work, and be responsible for procurement of local equipment and arranging for installation of imported equipment.

75. Fellowships for university and Ministry of Education staff would be awarded on the basis of selection criteria and procedures agreed between the Government and the Bank. Administration of fellowships at overseas universities would be the responsibility of the Ministry of Education. Specialists for improving the quality of science and engineering education and research would be hired by the Ministry of Education in consultation with project universities and the chairman of the advisory panel. Agreement was reached that the Government would submit for Bank review draft terms of reference for specialist services before signing contracts (draft Loan and Development Credit Agreements, Section 3.02).

Project Cost and Financing

76. The total cost of the proposed project is estimated at \$295 million, including contingencies. The following are included in project costs: (a) ongoing and planned construction to house project equipment; (b) locally procured and imported equipment and furniture; and (c) technical assistance. Cost estimates for civil works, goods, and services are based on December 1980 prices. The technical assistance costs for foreign experts, including salaries, housing costs, allowances and international airfares, were estimated at \$7,500 per man-month and costs for overseas fellowship training were estimated at \$1,250 per man-month. The contingency allowance of \$55 million includes: (a) physical contingencies (\$12 million) estimated at 5% of base costs; and (b) price contingencies (\$43 million) allowing for estimated price escalation of 4% p.a. for computers and all local cost components, and 9% in 1981, 8.5% in 1982, and 7.5% p.a. in 1983-85 for all other foreign procurement. Cost estimates exclude duties and taxes on project-financed goods, which will be borne by the Government. Recurrent costs generated by the project are estimated at about \$95 million per annum in 1981 prices. This would represent about 1% of the Ministry of Education's projected total budget in 1985/86, or about 6% of its higher education budget for that year. Total Bank Group financing under the proposed loan/credit would amount to \$200 million (68% of total project costs) and cover all foreign exchange costs. Retroactive financing of up to \$5 million is recommended for expenditures to be made between Board approval and signing of the Loan and Development Credit Agreements. The remaining \$95 million of project costs would be financed by the Government.

Procurement and Disbursement

77. Civil works are in an advanced stage of preparation. Local procedures would be used and the Government would finance all civil works under the project. Equipment items for the project would be grouped into packages to the extent possible for bulk procurement. Contracts estimated to exceed \$100,000 each would be awarded on the basis of international competitive bidding in accordance with Bank Group Guidelines. Local manufacturers would be given the standard preferences in bid evaluation. The amount of equipment contracts to be awarded to local suppliers through international competitive bidding is expected to be small. Purchases estimated to cost less than \$100,000 per contract and not exceeding an aggregate amount of \$20 million could be procured through direct purchase under procedures satisfactory to the Bank (draft Loan Agreement, Section 2.03 and Schedule 4, para. C; draft Development Credit Agreement, Section 2.03 and Schedule 3, para. C). It was understood by the Government and the Bank that under such procedures: (a) direct purchase would be used for proprietary items procured under contracts directly negotiated with the supplier of such items. Direct purchase would also be used when justified by the need for standardization or where the early delivery of the items is critical to the timely execution of the project; and (b) for other items, contracts would be awarded after obtaining quotations from at least three suppliers and on the basis of comparison and evaluation of the quotations so obtained. Assistance in installation, operation and maintenance of the laboratory equipment and in management of the centers would be provided under the project by the proposed review commission and advisory panel of experts. The Bank received assurances from the Government that buildings suitable for installation of the proposed equipment would be available before the delivery of equipment to the project universities (draft Loan and Development Credit Agreements, Section 3.10).

78. Award of contracts for items or packages exceeding \$100,000 in value would be referred to the Bank for prior review (draft Loan Agreement, Schedule 4, para. D; draft Development Credit Agreement, Schedule 3, para. D). Equipment would be procured in three phases spread over about two years, the first to commence in late 1981. As this would be the first World Bank Group project in China, an understanding was reached that the Bank would participate in reviewing award of all equipment contracts during the first phase of procurement.

79. The proposed loan/credit of \$200 million equivalent would 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, 1986.

Benefits and Risks

80. Benefits. There would be three principal benefits from the proposed project: (a) the increased output of graduates and research work in science and engineering from the higher education system; (b) the improved quality of science and engineering graduates and research work; and (c) the increased management capacity for administration and planning of higher education at the university and Ministry of Education levels. In addition, the project would lay the groundwork for further development of the education sector through the support of studies and development programs.

81. The increased output of high-level science and engineering graduates generated by the project should meet about one third of China's average annual incremental needs. The measures taken to improve the quality of this output should increase the productivity of these graduates in their chosen fields. The creation of at least 50 graduate programs and the establishment of 46 well-equipped laboratory centers under the project would increase the volume and quality of research activities. Increases in the quantity and improvement in the quality of science and engineering graduates and research should, over the long term, enhance China's capacity to use and generate technology needed for development. In addition, the institution building provided by the project should have the long-term benefit of improving the overall operation of the education sector, as well as planning for future development.

82. Risks. A major risk to project implementation would be difficulties, especially in the procurement of goods and services, arising from China's inexperience in implementing a Bank project. To help reduce this risk, the Bank and UNDP have assisted with the preparation of specifications and tender documents. There is also a risk related to the implementation of staff development programs and installation of laboratory equipment. Managerial improvements may occur more gradually than originally anticipated. The proposed large number of fellowships might not be effectively utilized due to Chinese faculty's poor command of foreign languages. To reduce this risk, the Bank obtained assurances that the foreign language training program would be implemented according to an agreed schedule (draft Loan and Development Credit Agreements, Section 3.09). There is also a risk that laboratory equipment might be procured before appropriate buildings were completed and, hence, be installed in temporary locations. To reduce this risk, the Bank obtained assurances that the necessary buildings would be completed before the equipment was due to arrive (draft Loan and Development Credit Agreements, Section 3.10).

PART V - LEGAL INSTRUMENTS AND AUTHORITY

83. The draft Loan Agreement between the People's Republic of China and the Bank, 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 III, Section 4 (iii), of the Articles of Agreement of the Bank, and the Recommendation of the Committee provided for in Article V, Section I(d) of the Articles of Agreement of the Association are being distributed to the Executive Directors separately.

84. Special conditions of the project are listed in Section III of Annex III.

85. I am satisfied that the proposed loan and credit would comply with the Articles of Agreement of the Bank and the Articles of Agreement of the Association, respectively.

PART VI - RECOMMENDATION

86. I recommend that the Executive Directors approve the proposed loan and credit.

Robert S. McNamara
President

June 1, 1981
Washington, D.C.

TABLE 3A
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	MIDDLE INCOME
					ASIA & PACIFIC	ASIA & PACIFIC
TOTAL	9597.0					
AGRICULTURAL	3196.0					
GNP PER CAPITA (US\$)		..	..	260.0	232.3	1136.1
ENERGY CONSUMPTION PER CAPITA (KILOGRAMS OF COAL EQUIVALENT)		650.1	500.2	834.6	499.4	1150.6
POPULATION AND VITAL STATISTICS						
POPULATION, MID-YEAR (THOUSANDS)	672865.0	815253.0		964505.0	..	..
URBAN POPULATION (PERCENT OF TOTAL)	..	12.0		13.2	17.3	40.8
POPULATION PROJECTIONS						
POPULATION IN YEAR 2000 (MILLIONS)				1239.1	.	.
STATIONARY POPULATION (MILLIONS)				1564.2	.	.
YEAR STATIONARY POPULATION IS REACHED				2070	.	.
POPULATION DENSITY						
PER SQ. KM.	70.1	84.9		100.5	153.6	373.1
PER SQ. KM. AGRICULTURAL LAND	214.0	263.0		297.8	360.3	2382.8
POPULATION AGE STRUCTURE (PERCENT)						
0-14 YRS.	..	..		32.3	37.4	39.8
15-64 YRS.	..	..		63.7	59.2	56.7
65 YRS. AND ABOVE	..	..		4.0	3.5	3.5
POPULATION GROWTH RATE (PERCENT)						
TOTAL	2.0	1.9		1.9/c	2.1	2.3
URBAN	..	..		3.0	3.4	3.8
CRUDE BIRTH RATE (PER THOUSAND)						
CRUDE BIRTH RATE (PER THOUSAND)	34.0/d	33.6		17.9	27.7	29.7
CRUDE DEATH RATE (PER THOUSAND)	10.8/d	7.6		6.2	10.2	7.5
GROSS REPRODUCTION RATE	..	..		..	2.5	1.9
FAMILY PLANNING						
ACCEPTORS, ANNUAL (THOUSANDS)	..	..		..	..	..
USERS (PERCENT OF MARRIED WOMEN)	..	..		..	20.4	44.1
FOOD AND NUTRITION						
INDEX OF FOOD PRODUCTION PER CAPITA (1969-71=100)	..	..		120.0	107.1	123.7
PER CAPITA SUPPLY OF						
CALORIES (PERCENT OF REQUIREMENTS)	..	..		104.0/i	98.6	112.6
PROTEINS (GRAMS PER DAY)	..	..		62.8	56.9	62.5
OF WHICH ANIMAL AND PULSE	..	..		16.5	14.2	19.7
CHILD (AGES 1-4) MORTALITY RATE						
	..	..		..	14.6	4.8
HEALTH						
LIFE EXPECTANCY AT BIRTH (YEARS)	..	..		64.0	57.7	64.0
INFANT MORTALITY RATE (PER THOUSAND)	..	..		56.0	89.1	50.2
ACCESS TO SAFE WATER (PERCENT OF POPULATION)						
TOTAL	..	..		..	30.1	45.9
URBAN	..	..		..	65.8	68.0
RURAL	..	..		..	20.1	34.4
ACCESS TO EXCRETA DISPOSAL (PERCENT OF POPULATION)						
TOTAL	..	..		..	17.6	53.4
URBAN	..	..		..	71.0	71.0
RURAL	..	..		..	4.8	42.4
POPULATION PER PHYSICIAN						
POPULATION PER PHYSICIAN	3009.8/d,g	1709.1/g		1162.1/g	3857.7	4428.7
POPULATION PER NURSING PERSON	2847.1/d,e	538.8/e		483.2/e	6411.8	2229.7
POPULATION PER HOSPITAL BED						
TOTAL	2142.5/d	737.8		499.2	1132.8	588.5
URBAN	..	..		172.1	322.3	579.6
RURAL	..	..		702.3	5600.5	1138.5
ADMISSIONS PER HOSPITAL BED						

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	..	..		..	..	..

TABLE 3A
CHINA, PEOPLE'S REP. OF - SOCIAL INDICATORS DATA SHEET

	CHINA			REFERENCE GROUPS (WEIGHTED AVERAGES - MOST RECENT ESTIMATE) ^{/a}	
	1960 /b	1970 /b	MOST RECENT ESTIMATE /b	LOW INCOME ASIA & PACIFIC	MIDDLE INCOME ASIA & PACIFIC
EDUCATION					
ADJUSTED ENROLLMENT RATIOS					
PRIMARY: TOTAL	102.0	103.0	93.0/f	85.9	99.8
MALE	94.4	100.6
FEMALE	64.5	98.8
SECONDARY: TOTAL	51.0	38.0/g	53.5
MALE	34.6/g	58.4
FEMALE	18.0/g	48.6
VOCATIONAL ENROL. (% OF SECONDARY)	3.8	21.1
PUPIL-TEACHER RATIO					
PRIMARY	25.1	32.8	34.2
SECONDARY	19.1	19.9	31.7
ADULT LITERACY RATE (PERCENT)	66.0	52.8	86.5
CONSUMPTION					
PASSENGER CARS PER THOUSAND					
POPULATION	1.7	12.7
RADIO RECEIVERS PER THOUSAND					
POPULATION	35.3	174.1
TV RECEIVERS PER THOUSAND					
POPULATION	3.7	50.6
NEWSPAPER ("DAILY GENERAL INTEREST") CIRCULATION PER THOUSAND POPULATION					
..	14.6	106.8
CINEMA ANNUAL ATTENDANCE PER CAPITA					
..	3.4	4.3
LABOR FORCE					
TOTAL LABOR FORCE (THOUSANDS)	234602.4/d,h	339960.5/h	403163.1/h	..	..
FEMALE (PERCENT)	29.3	37.4
AGRICULTURE (PERCENT)	71.0	69.8	50.2
INDUSTRY (PERCENT)	17.0	14.1	21.9
PARTICIPATION RATE (PERCENT)					
TOTAL	37.0/d	41.7	41.8	39.7	40.2
MALE	51.5	49.8
FEMALE	23.3	31.1
ECONOMIC DEPENDENCY RATIO	0.9	1.1	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	134.1	248.6
RURAL	111.6	193.7
ESTIMATED RELATIVE POVERTY INCOME LEVEL (US\$ PER CAPITA)					
URBAN	249.8
RURAL	234.3
ESTIMATED POPULATION BELOW POVERTY INCOME LEVEL (PERCENT)					
URBAN	41.7	21.2
RURAL	51.7	32.2

.. Not available.
. Not applicable.

NOTES

/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; China included in total only.

/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 1976 and 1979.

/c Latest estimate of annual growth of population is 1.2%.

/d 1957.

/e Including barefoot doctors; /f Net enrollment; /g Excluding traditional medical doctors.

/h Including military personnel and those awaiting permanent jobs, most of whom are in temporary jobs.

/i Between 1977-79 per capita supply of calories was estimated to have increased by 16.5%.

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 "Capital Surplus 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 show 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.

LAND AREA (thousand sq. km.)

Total - Total surface area comprising land area and inland waters.
Agricultural - Estimate of agricultural area used temporarily or permanently for crops, pastures, market and kitchen gardens or to lie fallow; 1970 data.

GNP PER CAPITA (US\$) - GNP per capita estimates at current market prices, calculated by same conversion method as World Bank Atlas (1977-79 basis); 1960, 1970, and 1979 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 1979 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 1979 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 area structures (sex ratio) are comprised 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 has been 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 1979 data.

Population Growth Rate (percent) - total - Annual growth rates of total mid-year populations for 1950-60, 1960-70, and 1970-79.

Population Growth Rate (percent) - urban - Annual growth rates of urban populations for 1950-60, 1960-70, and 1970-79.

Crude Birth Rate (per thousand) - Annual live births per thousand of mid-year population; 1960, 1970, and 1979 data.

Crude Death Rate (per thousand) - Annual deaths per thousand of mid-year population; 1960, 1970, and 1979 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 1979.

Family Planning - Acceptors, Annual (thousands) - Annual number of acceptors of birth-control methods in 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 (1969-71=100) - Index of per capita annual production of all food commodities. Production includes seed and feed and is on calendar year basis. Commodities cover primary goods (e.g. oranges 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 1979 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 of 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 1979 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 allowance of 60 grams of total protein per day and 20 grams of animal and pulse protein, of which 10 grams should be animal protein. These standards are lower than those of 75 grams of total protein and 23 grams of animal protein as an average for the world, proposed by FAO in the Third World Food Survey; 1961-65, 1970 and 1979 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 1979 data.

Child (ages 1-4) Mortality Rate (per thousand) - Annual deaths per thousand in age group 1-4 years, to children in this age group; for most developing countries data derived from life tables; 1960, 1970 and 1979 data.

HEALTH

Life Expectancy at Birth (years) - Average number of years of life remaining at birth; 1960, 1970 and 1979 data.

Infant Mortality Rate (per thousand) - Annual deaths of infants under one year of age per thousand live births.

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 practicing physicians qualified from a medical school at university level.

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

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 hospital 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 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 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 population; includes 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 1979 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 1979 data.

Industry (percent) - Labor force in mining, construction, manufacturing and electricity, water and gas as percentage of total labor force; 1960, 1970 and 1979 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 1979 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

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

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

Estimated Absolute Poverty Income 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 - Absolute 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".

CHINA

ECONOMIC INDICATORS

<u>National Accounts</u>	Billion yuan at		Shares of		Growth at	
	current prices		GDP (%)		constant prices	
	<u>1957</u>	<u>1979</u>	<u>1957</u>	<u>1979</u>	<u>Actual</u> <u>1957-79/a</u>	<u>Projected</u> <u>1980-85/b</u>
Gross Domestic Product	105.54	391.24	100.0	100.0	5.3	4.0
Investment	24.43	121.72	23.1	31.1	8.5	4.0
Consumption (and residual error)	80.66	272.98	76.4	69.8	3.9	4.0
Foreign trade balance	0.45	-3.46	0.4	-0.9	--	9.6
Agriculture	n.a.	121.28	n.a.	31.0	2.3/c	3.0
Industry	n.a.	183.88	n.a.	47.0	10.2/c	4.5
Services	n.a.	86.07	n.a.	22.0	3.3/c	4.5

<u>Labor Force, 1979</u>	<u>Millions</u>	<u>%</u>
Agriculture	288.1	71
Industry	69.0	17
Services	48.7	12
Total	405.8	100

<u>Government Finance</u> (billion yuan)	<u>1957</u>	<u>1978</u>	<u>1979</u>
Total revenue	31.0	112.1	110.3
Total expenditure	30.4	111.1	127.3
of which fixed investment	12.4	48.9	55.8
Budget surplus/deficit	0.6	1.0	-17.0

<u>Prices (1950 = 100)</u>	<u>1957</u>	<u>1978</u>	<u>1979</u>
Retail price index	121.3	131.5	134.0
Agricultural procurement price index	146.2	217.4	265.5
Exchange rate (Y/US\$)	2.462	1.661	1.541

<u>Balance of Payments (\$ billion)</u>	<u>1977</u>	<u>1978</u>	<u>1979</u>	<u>Projected 1985 /e</u>
Exports, f.o.b.	8.1	9.7	14.0	22.9
Imports, c.i.f.	-7.6	-11.4	-17.3	-27.6
Trade balance	0.4	-1.7	-3.3	-4.7
Current account balance /d	0.9	-0.4	-1.5	-1.9
Capital account	-0.4	-0.3	2.2	1.9
Overall balance (deficit -)	0.5	-0.8	0.7	-

<u>Composition of Exports (%)</u>	<u>1977</u>	<u>1978</u>	<u>1979</u>	<u>Projected 1985/e</u>
Energy	n.a.	13.8	19.5	17.5
Other primary products	n.a.	39.7	34.1	29.7
Manufactures	n.a.	46.5	46.4	52.8

<u>Composition of Imports (%)</u>	<u>1977</u>	<u>1978</u>	<u>1979</u>	<u>Projected 1985/e</u>
Machinery and equipment	17.7	17.5	25.2)	82.3
Raw materials	58.4	63.9	56.1)	
Food and consumer goods	23.9	18.6	18.7	17.7

<u>External Debt Outstanding (\$ million, end-year)</u>	<u>1977</u>	<u>1978</u>	<u>1979</u>	<u>Projected 1985/f</u>
Official	n.a.	n.a.	200-300	n.a.
Other	n.a.	n.a.	3,100-3,200	n.a.
Total	n.a.	n.a.	3,400	14,500

- /a 1970 prices.
/b 1979 prices.
/c Net material product.
/d Includes official transfers.
/e 1980 prices.
/f 1985 prices.

Note: Data in this table generally adjusted to be consistent with Western accounting conventions. For details, see Annexes A and H of China: Socialist Economic Development (Report No. 3391-CHA).

STATUS OF BANK GROUP OPERATIONS IN THE PEOPLE'S REPUBLIC OF CHINA

A. STATEMENT OF BANK LOANS AND IDA CREDITS (as of June 1, 1981)

None.

B. STATEMENT OF IFC INVESTMENTS (as of June 1, 1981)

None.

C. PROJECTS IN EXECUTION

None.

PEOPLE'S REPUBLIC OF CHINA

UNIVERSITY DEVELOPMENT PROJECT

Supplementary Project Data Sheet

Section I: Timetable of Key Events

- (a) Time taken by the country to prepare the project : Five months
- (b) The project was prepared by : The Government and the Bank
- (c) Date of first mission to consider the project : August 1980
- (d) Appraisal mission : November 1980
- (e) Completion of negotiations : May 1981
- (f) Planned loan/credit effectiveness : September 1981

Section II: Special Bank Implementation Actions

None.

Section III: Special Conditions

A. Conditions of Effectiveness

- (a) The Borrower's State Council shall have approved the Loan and Development Credit Agreements.
- (b) All conditions precedent to the effectiveness of the Loan and Development Credit Agreements shall have been fulfilled (a cross-effectiveness provision).

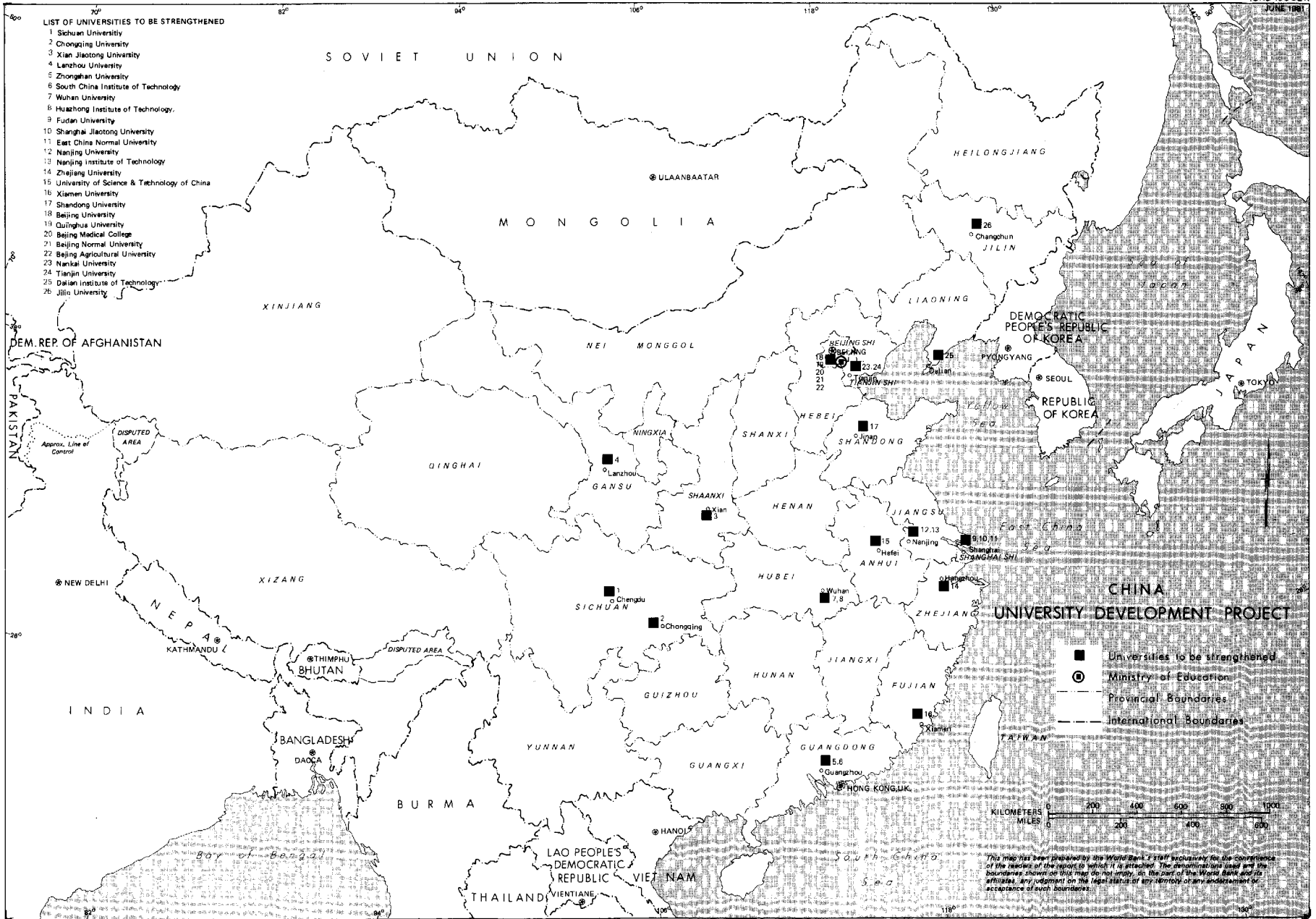
B. Other Conditions

- (a) The Borrower shall establish not later than November 30, 1981, and thereafter maintain until the Closing Date, a review commission consisting of Chinese experts in science and engineering. The commission will assist and coordinate the development of teaching and research programs and advise on the installation, operation and maintenance of equipment (para. 67).

- (b) The Borrower shall establish, not later than November 30, 1981, and thereafter maintain until the Closing Date an advisory panel of foreign experts, which will assist and advise the project universities and the review commission (para. 67).
- (c) The Borrower shall select candidates for fellowships and training in accordance with agreed procedures and criteria, and establish and carry out foreign language training for selected fellows in accordance with the agreed program (paras. 68 and 82).
- (d) The Borrower shall ensure that buildings suitable for installation of the proposed equipment will be completed prior to the delivery of the equipment to the project universities (paras. 77 and 82).

LIST OF UNIVERSITIES TO BE STRENGTHENED

- 1 Sichuan University
- 2 Chongqing University
- 3 Xian Jiaotong University
- 4 Lanzhou University
- 5 Zhongshan University
- 6 South China Institute of Technology
- 7 Wuhan University
- 8 Huazhong Institute of Technology
- 9 Fudan University
- 10 Shanghai Jiaotong University
- 11 East China Normal University
- 12 Nanjing University
- 13 Nanjing Institute of Technology
- 14 Zhejiang University
- 15 University of Science & Technology of China
- 16 Xiamen University
- 17 Shandong University
- 18 Beijing University
- 19 Qinghua University
- 20 Beijing Medical College
- 21 Beijing Normal University
- 22 Beijing Agricultural University
- 23 Nankai University
- 24 Tianjin University
- 25 Dalian Institute of Technology
- 26 Jilin University



CHINA
UNIVERSITY DEVELOPMENT PROJECT

- Universities to be strengthened
- ⊙ Ministry of Education
- - - Provincial Boundaries
- International Boundaries



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