



**AGENCY FOR
INTERNATIONAL
DEVELOPMENT**

COUNTRY FIELD SUBMISSION

FY 1971

INDIA

ANNEX L & M

**DEPARTMENT
OF
STATE**

NOVEMBER 1969



ANNEX I

MINERAL DEVELOPMENT STRATEGY FOR INDIA

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ANNEX L

MINERAL DEVELOPMENT STRATEGY FOR INDIA

I. INTRODUCTION

India's mineral environment is geologically similar to that of Canada. A very ancient continental nucleus is surrounded by metal-liferous pre-Cambrian geosynclines. Around these are warped younger sediments which in places contain deposits of coal, oil and gas. India comprises one-third of the continental area of Canada or, since Canada's arctic islands are not practicable for bulk mining because of sub-zero weather and lack of transport, roughly one-half of Canada's mineable area. In 1965 Canada produced \$1,923 million of metallic minerals^{1/} and India only \$64 million^{2/3/}. With the macrogeologic similarity between the two countries, and increasing world exploration experience in like environments such as Western Australia and the Guyana Shield of South America it is reasonable to assume that India's metal production alone could be brought up to nearly \$1 billion per year, radically improving India's balance of payments by the mid 1970s.

Parallel increases in production of petroleum and mineral raw materials for fertilizer could be attained with a substantial benefit to India's foreign exchange position.

The situation of mineral abundance in India becomes even more interesting when one considers that mining enterprises are generally not foreign exchange intensive. Indeed one foreign exchange dollar invested in a mineral project usually returns itself in full each year during the life of the project either through reduced imports or increased exports.

This paper discusses the foreign exchange considerations of minerals development and describes in detail the possibilities for development of known deposits and further exploration for new deposits. Major emphasis is placed on iron ore, fertilizer raw materials and petroleum. The paper also discusses the international, legal, and other deterrents to development, the mineral projects which AID might assist, and the policies which it should encourage.

1/ Canada Department of Energy, Mines and Resources Map 900A, Sixteenth Edition, 1966.

2/ Royce, J., "Position Paper Number 15," Indian Mineral Development, March 1967, pp. 2.

3/ Sweetwood, C.W., Embassy A-1236, Mineral Industry Report, June 30, 1966.

II. SUMMARY AND CONCLUSIONS

India can earn additional foreign exchange by exporting minerals and, at the same time, save foreign exchange by increasing domestic production of fertilizer, industrial and energy minerals to meet domestic demand. Several attractive economic deposits of phosphate, sulfur (as pyrite), copper, lead and zinc are now well known and only await development. Offshore rock structures favorable for oil exploration only require GOI decisions for drilling to commence in well defined areas. There is a good chance of meeting India's demands for these minerals in the next ten years. In addition, fair chances exist for discovery of economically exploitable deposits of potash in selected areas of Rajasthan. It is estimated that if the known deposits discussed in this paper are brought into production the chances are good that India's foreign exchange availabilities will be increased by about \$485 million a year mostly through reduced imports. In addition, there is a fair chance that a further \$255 million can be obtained from deposits and anomalies now being explored. Thus, the total potential additional foreign exchange earning/saving in the mineral sector could total well over \$700 million a year.

Since (a) large undeveloped or underdeveloped economically attractive deposits are known, (b) the need for development is large, and (c) extensive exploration is underway, any increase in Indian financial outlay should be in development of known deposits rather than additional exploration. The problem for the GOI is to assign priorities among the many mineral projects available and to decide where and when to use scarce development funds, trained personnel and managerial talent. In many countries mineral projects can be ranked according to return on investment but in India foreign exchange returns, domestic demand, defence and energy requirements, and occasionally political considerations, complicate and retard decision making.

One attractive option available to the GOI is the joint venture in conjunction with foreign private collaborators. This marriage of GOI enterprises with foreign companies provides technical experience and capital outlay with minimal drain on scarce Indian financial resources although repatriation of foreign investment and profits will represent an eventual foreign exchange cost. A current example of foreign collaboration, authorized by the Cabinet, is the Kudremukh iron ore venture in which the GOI National Mineral Development Corporation (NMDC) holds a controlling interest, with a Japanese consortium having 24% of the shares and the Marcona Corporation of San Francisco 25%. Marcona is responsible for technical management in the field. So far only development drilling and pilot plant work are underway, but the work is proceeding expeditiously with the rapid decentralized decision making and smooth purchasing procedures which characterize U.S. private industry.

Before 1968 no major joint (private-public) ventures in minerals had materialized. The Kudremukh enterprise represents a breakthrough in the GOI's interpretation of the Industrial Policy Resolution of 1956.

The Mission should encourage, finance, or guarantee similar private sector/public sector marriages in the mineral field when they appear economic. Continued success of such joint ventures might induce the GOI to permit more open prospecting by groups increasingly oriented toward the private sector. A further advantage to India would be increased foreign exchange input as an add-on (in many cases) to the AID program. This add-on should be attractive to the GOI whenever it can be shown that foreign exchange earnings/savings will exceed repatriation costs by a wide margin.

The pace of raw material development could be stepped up by improved management of technical and material resources. The Mission should encourage and/or finance:

(1) Closer cooperation, particularly in iron ore export, between producers, transporters, loaders and sellers to attain the price, quality control, and flexibility needed to satisfy foreign customers.

(2) Freedom of decision for public sector company executives to decide where, when and how promising deposits should be brought to production without time-consuming Ministry and Cabinet deliberations.

(3) On-the-job training abroad for large numbers of administrative and technical mining people from both the public and the private sector in modern exploration, mining, and mineral dressing techniques.

(4) Studies of agglomerating iron ore fines now being wasted and upgrading manganese ores now too lean to be marketable.

(5) Assistance to private sector miners by:

- (a) liberalizing the lending laws to permit loans for mine leasehold improvements,
- (b) extending the small industry program to the mining sector,
- (c) studying the possibilities of setting up a mining bank specifically to assist the private mining sector.

(6) Modification or more liberal interpretation of the defence

laws to permit widespread public and academic use of topographic maps, aerial photos, and geologic maps.

AID should urge the GOI to make the appropriate policy changes to bring about these developments and, if nothing is done, raise the issue at a meeting of the Consortium and suggest that minerals development be included as one of the main criteria by which India's self-help performance is measured. This kind of prodding can only be effective if AID is willing to help with the financing of such high priority projects as Kudremukh iron ore, Saladiपुरa pyrite (sulfur), Zawar lead and zinc expansion, Agnigundula lead-copper, studies of ore treatment, and the training of picked personnel. The need for training can be appreciated when one considers that, in the GOI Khetri Copper Project, a complex mining, milling and smelting operation costing the GOI Rs 88 crores, it is reported that there is only one Indian individual from miner to manager out of a total of more than 3,000 men who has any previous experience in mining or milling copper ore. Nearly all Indian engineers and many geologists are coal mine oriented.

III. FOREIGN EXCHANGE REQUIREMENTS AND POTENTIAL SAVINGS

Without major increases in foreign exchange earnings and savings India's industrial development will languish. The total possible additional foreign exchange contribution of the mineral sector is estimated to be about \$740 million per year. The probability is good for foreign exchange earnings or savings of about \$485 million and fair for earning \$255 million of additional foreign exchange savings by the mid 1970s as shown in Table 1.

Table 2 shows the import/export situation in the major mineral trade items. It excludes copper, lead, zinc, nickel and tin (which are imported largely as refined metals) and minor mineral exports and imports which nearly balance each other at from 6 to 8 million dollars annually.

In 1968 mineral exports exceeded imports for a net foreign exchange earning of \$37.7 million. In 1974, however, unless accelerated development of known rock phosphate, sulfur, and petroleum deposits is accorded highest priority we estimate that imports will exceed exports for a foreign exchange outflow of \$74.5 million.

The pressure to develop more indigenous copper, lead, and zinc metal mines is accentuated by the existing non-ferrous metal gap, shown in Table 3, which shows signs of widening in the future.

Although the Planning Commission and other GOI agencies are

Table 1

Potential Additional Foreign Exchange Saved Or Earned Annually

(\$ million)

<u>Mineral</u>	Amount ^{a/} (million \$)	By	<u>Probability of success</u>
A. Good probability of success:			
Sulfur (as pyrite)	40	1975 ^{c/}	Good
Iron ore	140 ^{b/}	1976 ^{d/}	Good
Phosphate rock	88	1975 ^{a/}	Good
Nonferrous metals (lead, zinc, copper)	91-126	1976 ^{f/}	Good
Petroleum (continental)	<u>90</u>	1975 ^{a/}	Good
Sub-total A	449-484		
B. Fair probability of success:			
Nonferrous discoveries (Operation Hardrock and GSI)	100	1976	Fair
Potash	30	1976 ^{b/}	Fair to poor
Additional petroleum discoveries (mainly offshore)	<u>125</u>	1976 ^{i/}	Fair
Subtotal B	255		
TOTAL	704-739		

Notes:

a/ Amounts saved unless indicated otherwise

b/ Amount earned

c/ Assuming a price of \$48.00 per ton and a requirement of 844,000 tons of elemental sulfur.

d/ Assuming a total export tonnage of 31.2 million tons of which 15.6 million will be at a price of \$9.00/metric ton. This price is higher than that used by the Planning Commission but assumes high quality ore.

(Notes to Table 1 continued)

- e/ Assuming 4.5 million tons of phosphate rock required at \$19.50 per metric ton.
- f/ See Table 4.
- g/ USAID estimate.
- h/ The Fourth Five Year Plan Draft predicts a requirement of 1.1 million tons of K₂O by 1973-74. Using 380 Rs/metric tonne for 60% K₂O raw material some \$92.7 million would be required yearly for import of potash. USAID believes that about 1/3 of this requirement will be met, or say \$30 million per year.
- i/ **Estimate** by C.M. Sweetwood and J. Royce.

Table 2

Present and Projected Major Exports and Imports

	^{a/} 1968		1974	
	Quantity (Million Tons)	Value (Million \$)	Quantity (Million Tons)	Value (Million \$)
MAJOR EXPORTS:				
Iron Ore	15.63	115.2	27.0 ^{b/}	217.8
Manganese	1.18	16.0	1.4	19.5
Mica	.022	18.8	.031	24.8
Coal	.49	3.8	-	-
Kyanite	.05	2.5	.035	1.7 ^{c/}
Bauxite	.09	0.6	.070	.5 ^{c/}
		<u>156.9</u>		<u>264.3</u>
MAJOR IMPORTS:				
Petroleum	8.80	69.6	16.3	193.6 ^{d/}
Rock phosphate	.81	15.7	4.5	88.7 ^{e/}
Sulfur	.38	27.7	0.84	40
Asbestos	.03	6.2	.08	16.5
		<u>119.2</u>		<u>338.8</u>

^{a/} Figures for 1968 from Monthly Statistics of the Foreign Trade of India.

^{b/} Estimate of working group in Planning Commission. The present draft of the Fourth Five Year Plan gives 31.2 million tons exported in 1974. USAID believes latter figure overoptimistic.

^{c/} Assuming 1968 prices.

^{d/} At the rate of \$11.88 per ton.

^{e/} At the rate of \$19.50 per ton.

Table 3

Non-ferrous Metals Gap in 1973-74^{a/}

<u>Item</u>	<u>Demand Estimate (metric tons)</u>	<u>Probable Production (metric tons)</u>	<u>Imports (metric tons)</u>	<u>Unit Price (\$/ton)</u>	<u>Value of Imports (Mill. \$)</u>	<u>Unfilled Demand (metric tons)</u>
<u>Metal:</u>						
Copper	124,000	35,500	52,000	1,247	64.8	36,500
Lead	97,000	6,000	43,000	281	12.1	48,000
Zinc	142,000	70,000	50,000	327	<u>16.4</u>	22,000
Sub-total:					<u>93.3</u>	
<u>Concentrate:</u>						
Zinc			100,000	100	10.0	
Total:					<u>103.3</u>	

^{a/} Table 3 prepared using metal sales price valid through June 30, 1969 minus duty and 5% commission charged by Minerals and Metals Trading Corporation (MMTC).

urgently trying to reduce imports of tin and nickel whose demand figures are uncertain it is likely that import will continue and 1973-74 outlay will be at least \$12.5 million for tin and \$5 million for nickel bringing the base metal total imports to \$120.8 million with a substantial unfilled demand.

IV. POSSIBILITIES FOR THE DEVELOPMENT OF KNOWN DEPOSITS

A. Iron Ore

India's principal mineral export is iron ore. Out of a total 1968 production of about 27.5 million tons, 15.6 million were exported earning \$115.2 million. India's reserves of high grade conventional ores are estimated at over 21 billion tons which greatly exceed India's domestic requirements for the foreseeable future. If low grade ores amenable to beneficiation were to be added, the 21 billion ton figure would be multiplied many times.

The largest and highest grade group of deposits in India are located at Bailadila in the Bastar District in Madhya Pradesh. Here, in some low mountains, more than a billion tons of hematite lump ore, averaging more than 66% iron, have been outlined by drilling, and mining operations have commenced. The formidable task of completing a 300 mile rail-road to the port of Vishakhapatnam in Andhra Pradesh has been completed and the open pit mines are now in production.

Two recent types of developments in iron ore mining and handling technology require particular attention in India: agglomeration and mechanical loading.

1. Agglomeration. When blasted in mining, iron ores always contain fines which tend to choke blast furnace. Similarly when low grade ores are ground up to beneficiate them, fines are created. Some of this material is finer than face powder and would be blown away by the air blast if the blast furnace were not entirely choked off. Therefore, the very finely ground ores are usually rolled into round "pellets" of less than one-half inch diameter and hardened by baking in a furnace. Coarser fines are melted into fragile blister-filled lumps called "sinter". Both sinter and pellets are easier to reduce in a blast furnace than run-off-mine ore like that currently shipped from India. Pelletizing and/or sintering of export ores from India should receive increasing study.

2. Transportation. Approximately 60% of the price of Indian iron ore in Japan represents the cost of transporting and handling the

ore^{1/}. Simply by carrying the ore in 70,000 ton ships instead of 10,000 ton ships more than \$3.50 per ton can be saved. However, as ship size increases, sophisticated mechanical loading and deeper ports are required. Ports in several countries competing with India for the Japanese market can load 100,000 dwt. carriers now and many more are planned.

At present only one port in India, Paradeep (Orissa), has been designed to berth and load 60,000 ton dwt. ships at 2,500 tons per hour. For purposes of comparison, the port of Norfolk, Virginia can load bulk products at one berth at 16,000 tons per hour, but Paradeep is badly silted up. No rail link is yet available connecting Paradeep with its first phase mines (Daiteri-Tonka) or its second phase long-term iron ore source (the Bonai Range). All that is needed is construction of the railway and dredging of the port. USAID financing will probably not be requested.

The port of Vishakhapatnam has been equipped with mechanical loading facilities for 2,500 ton per hour loading of vessels up to 35,000 tons. The foreign exchange costs of this project were made available to India by a technical assistance loan from the President's Asian Development Fund. An offshore loading point, protected by a breakwater, is now under active consideration. It is planned to load 100,000 ton dwt. ships here with Bailadila lump iron ore at an accelerated rate, USAID should encourage this progressive GOI program, since even when competing with sinter and pellets, high grade lump iron ore will find a market for many years.

Marmagoa, the major port at Goa, can presently load ships inshore of about 30,000 - 35,000 dwt. tons at 600 tons per hour mechanically and by barge offshore at varying but unimpressive speeds. A plan to modernize this port, whose ore is all mined by the private sector, should receive sympathetic USAID consideration if the World Bank decides not to provide the assistance which the GOI has requested.

In addition, economies in inland transportation, particularly in rough terrain, can be achieved at times by judicious use of conveyor belt systems and pipeline transportation of finely ground ores. Feasibility studies of these special cases should be financed by AID if appropriate requests are received from the GOI.

As pellets become increasingly popular in the world's markets, the need to develop deposits near the sea will increase because reduced inland transport costs will offset part or all of the pelletizing costs. The Kudremukh project in Mysore is planned to mine, pelletize and ship initially 4 million and later 8 million tons per year of high grade pellets from a 5 billion ton deposit located 20 miles from the sea and less than 50 rail miles from the port of Mangalore which the GOI plans to enlarge to berth 100,000 ton dwt. ore carriers. The project cost

^{1/} Battelle Memorial Institute, "Potential for Export of Iron Ore and Derivatives of India to 1975," p. VII-2.

estimate is \$60 million of which \$24 million will be foreign exchange. At the 4 million ton rate, some \$36 million of foreign exchange can be earned annually. At a later date it may be possible to pulverize the ore and ship part of it as a slurry in giant tankers around the Cape of Good Hope to Europe at costs fully competitive with African ores. If this can be done India's iron ore export to Europe might increase substantially.

Because of port problems which raise the transportation costs of Indian iron ore, high inland transportation costs, and the physical drawbacks of some of the ores, India will probably not be able to export more than about 31 million tons of iron ore in 1975. Even this figure will depend on considerable improvement in sales flexibility, reduction of transportation costs, and the offer of a wider product mix to include pellets and low cost sinter fines.

B. Other Foreign Exchange Earners

India has long been a prime supplier of manganese and mica in the free world. Recently Brazilian and African manganese have cut into India's traditional dominance. In 1966 India exported 1.2 million tons of manganese ore worth \$21 million. In 1968 only 1.18 million tons were sold abroad worth \$16.0 million. Most of India's manganese is produced in the private sector and unless considerable assistance is provided this adverse trend may continue. Private producers should be permitted to extend their producing areas if they can demonstrate financial and operating responsibility. The Federation of Indian Mineral Industries estimated in their 1967 "Requirements of Finance for the Metalliferous Mining Industry", that \$11-24 million of extra manganese could be exported if private producers were able to obtain finances to modernize their mining equipment. Joint ventures with foreign private firms might prove a relatively inexpensive and technically satisfactory solution to this problem. If sufficient assistance is forthcoming, the USAID Export Promotion Division's forecast of \$22.5 million earned by exporting manganese in 1970-71 may be attainable. However a more conservative estimate envisions \$19 to 20 million of manganese export earnings by 1973-74.

In 1966 India exported 30,000 tons of mica worth \$20 million. In 1968 only 22,000 tons were exported worth \$18.8 million. New technologies in the electronics industries are reducing the mica required there but this is offset by increased demand for mica and formica in furniture manufacture and construction. The export level of this mineral will rise only slightly in the early 1970s.

C. Copper

It is apparent from Table 3 that the most important base metal lacking in India is copper. Currently the capacity of the private sector

Table 4
Known Indian Non-Ferrous Metal Mining Prospects^{a/}

Name of deposit and location	Metals	Estimated reserve (million metric tons)	Grade	Projected rate of ore production (million metric tons/year)	Projected rate of metal produced 90% recovery (metric tons/year)	Unit price of metal in India (dollars/metric ton)	Value of potential production/year (million U.S. dollars)	Possible date of production
Rajasthan:								
Khetri	Copper	70	1% Cu.	2.4	21,600 Cu.	1,247	26.9	1973
Kolihan (central block)	Copper	24	1.42% Cu.	.4	6,134 Cu.	1,247	7.6	1973
Dariba	Zinc	10	6% Zn.	.4	21,600 Zn.	327	7.1	Not Announced
Rajpura	Lead		4% Pb.	.4	14,400 Pb.	281	4.0	Not Announced
Zaver	Zinc	50	2% Zn.	1.0	18,000 Zn.	327	5.9	In Production
	Lead		3.5% Pb.	.09	3,000 Pb.	281	0.8	In Production
Andhra Pradesh:								
Amizundala								
a. Bandalamottu	Lead	5	6.5% Pb.	.2	8,775 Pb.	281	2.5	1971 Assumed
	Copper	1	1.0% Cu.	.03	270 Cu.	1,247	.3	Not Announced
b. Nallekonda	Copper	5	1.47% Cu.	.2	1,984 Cu.	1,247	2.5	1971
c. Dhukonda	Lead	.4	9.6% Pb.	.03	2,592 Pb.	281	.7	Not Announced
	Copper	.2	1.54% Cu.	.08	1,039 Cu.	1,247	1.3	Not Announced
Mallaram	Copper	10	2% Cu.	.4	7,200 Cu.	1,247	9.0	Not Announced
Bihar:								
Baragunda	Copper	10	2.5% Cu.	.4	9,000 Cu.	1,247	11.2	Not Announced
Mines - Bihar Block:								
*Rakha	Copper	14	1.5% Cu.	.3	4,050 Cu.	1,247	5.1	1971 Assumed
Roam-Sideswar	Copper	32	1.25% Cu.	.2	1,687.5 Cu.	1,247	2.1	Not Announced
Tama Pahar	Copper	25	1.20% Cu.	.2	1,620 Cu.	1,247	2.0	Not Announced
Madhya Pradesh:								
Chitaldrug	Copper	4	2% Cu.	.08	1,350 Cu.	1,247	1.7	Not Announced
*Maximum Rakha	Copper	75	1.32% Cu.	3	35,640 Cu.	1,247	90.7	Total will be \$125.9 million
							44.4	

a/ Reserve estimates and grade of mineral obtained from GOI sources. Prices calculated, as in Table 3, using metal sales price valid through June 30, 1969 minus duty and 5% commission charged by Minerals and Metals Trading Corporation (MNTC).

Indian Copper Corporation in Bihar, now the only domestic producer, is 9,500 tons of copper per year. This will rise to 16,500 tons of copper metal per year by the end of 1971. However, several known deposits could be developed in time to meet most of India's demand for copper by the mid 1970s if important decisions are taken by the GOI and adequate financing is available.

The first planned additional producer is the Khetri-Kolihan project in Rajasthan (see Table 4) of Hindustan Copper Limited (HCL). This government-owned company plans to produce 27,700 tons of copper per year from this area with an annual foreign exchange saving of \$34.5 million beginning in 1971. USAID questions whether this production rate can be attained that early owing to the discontinuous nature of the ore deposit. With extensive French assistance, however, the project will be launched before 1975.

Rakha Mines, Bihar, owned by HCL, have no planned source of foreign financing, although provision for rupee financing is included in the current 4th Five Year Plan Draft. A modest beginning is planned to produce 4,050 tons of copper per year worth \$5.1 million, which would be expanded to 7,360 tons of copper (worth \$9.2 million) per year. HCL has a projected starting date of 1971 but USAID doubts that production can commence before 1975. USAID believes, however, that a much more ambitious plan could be keyed to these large ore bodies with eventual production of 36,640 tons of copper annually worth \$44.4 million by 1975-76. Prompt financing and extensive training and technical assistance will be required to reach the latter figure. A rough estimate of the cost of the full scale project would be \$160 million with a foreign exchange component of \$48 million. The foreign exchange cost of the project would be saved in slightly more than one year.

Another breakthrough in India's public sector array of new mines may be in the offing. The GOI is seeking a U.S. collaborator for a joint venture at the Agnigundula copper deposit in Andhra Pradesh. Currently known copper and lead reserves at Agnigundula could be mined at a gross saving of \$7.3 million per year (see Table 4). Whether this small lead-copper prospect will be of interest to American mining concerns is doubtful, but exploration continues and the reserves may be expanded. USAID should assist the GOI to find a suitable American partner and eventually provide direct loans or Extended Risk Guarantees if a viable project eventuates.

D. Lead and Zinc

The lead potentialities of Agnigundula have been treated above under copper, but first place among Indian lead-zinc mines belongs to the Zawar Mines of Hindustan Zinc Limited, a government-owned enterprise. The mining area is located some 25 miles south of Udaipur, Rajasthan, and

ore reserves probably amount to 50 million tons. Presently production is expanding with French assistance, in both the mine and the smelter at Debari. The ore body seems capable of supporting an even larger mining operation, particularly in its lead-rich portions and indeed expansion of the existing mine and creation of a new one are authorized in the Fourth Five Year Plan Draft (p. 259). The source of the requisite foreign exchange is not known.

In 1967 India imported \$21.3 million worth of zinc and \$9.6 million worth of lead. Table 4 indicates that substantial portions of these minerals could be mined locally.

Plans are not yet in hand for development of Dariba-Rajpura in Rajasthan where a high grade lead/zinc deposit with a probable reserve of 10 million tons is under continuing exploration. This deposit, if mined at the rate of 400,000 tons per year, could save more than \$11.1 million annually. If a joint venture can be arranged for development of Dariba-Rajpura it would be a leading candidate for an Extended Risk Guarantee or possibly a direct AID project loan.

E. Sulfur

In 1966 India imported 283,000 tons of sulfur with a value of \$15.8 million. By 1968 increased use of fertilizers had increased imports to 380,000 tons costing \$27.7 million. As much as 844,000 tons may be required in the mid 1970s costing \$40 million or more.

This requirement could all be obtained indigenously by bringing into production the Saladipura pyrite deposit in Rajasthan in addition to the Amjhore deposit in Bihar which is now under development. According to Mr. W.E. Seppanen, a U.S. mining consultant who reported to USAID on these deposits in 1966, the Saladipura pyrites could be mined and roasted at a saving compared to the cost of sulfur delivered to Indian ports.

USAID should encourage the development of the Saladipura deposit now included in the Fourth Five Year Plan Draft, and possibly finance foreign exchange costs of the project. Seppanen estimated the total development cost at \$26 million of which \$12.5 million would be foreign exchange. Today, with increased indigenous mining equipment manufacturing capacity, the foreign exchange cost might be nearer \$10 million.

F. Rock Phosphate

Phosphate has been known to exist in India for more than 50 years but it remained for Dr. Richard Sheldon, now Assistant Chief Geologist (Economic Geology) of the U.S. Geological Survey, to focus the attention of Indian geologists on the possibilities of finding economic

phosphate rock deposits in Rajasthan and Uttar Pradesh with the "Sheldon Report" in April 1966.

Assisted by Mr. David Davidson and Mr. Anthony Stanin, USGS geologists, working near Mussoorie, Uttar Pradesh, and by Mr. Philip Good, U.S. Bureau of Mines Extractive Metallurgist, working in Nagpur, Maharashtra, on Mussoorie and Rajasthan ores, under "Operation Softrock" financed by the Consulting Services Loan, ~~GOI~~ geologists have found several poor to fair deposits of phosphate rock, some of which may eventually be mined.

However, Mr. M.L. Sethi, Director of the Rajasthan State Directorate of Mines and Geology, employed exploration methods pioneered in India by Dr. Sheldon to find the Jhama Kotra and other deposits located a few miles east of Udaipur. Here some 30 million tons of phosphate rock averaging more than 33% P_2O_5 have been located and partly sampled by drilling. Preliminary tests by Mr. Good and his colleagues at the Indian Bureau of Mines indicate that this raw material is suitable for fertilizer manufacture without beneficiation. USAID estimates that \$10 million of foreign exchange for large scale open pit mining and crushing equipment could save the GOI \$88 million per year.

Probably more than 40 million tons of lower grade phosphorite ore averaging about 24% P_2O_5 are also present and Mr. Good's beneficiation experiments indicate a probability that it can be mined and beneficiated at a cost lower than that at which phosphate rock can be imported.

More exploration, beneficiation and engineering studies are needed but all indications are that India will be independent in phosphate rock with a saving of \$88 million annually by the mid 1970s.

USAID should encourage viable projects based on this raw material and urge Indian officials to develop it with all possible speed.

V. POSSIBILITIES FOR FURTHER EXPLORATION

A. Petroleum

In 1967 the Indian Petroleum Institute informed USAID that 22.6 million tons of crude petroleum would be required in India in 1971. The present draft of the Fourth Five Year Plan estimates imports for 1973-74 at 16.3 million tons worth \$193.6 million. The Fourth Five Year Plan 1969-74 (p. 248) estimates crude throughout at 17.5 metric tons and petroleum products manufactured in India at 16.1 million tons in 1968-69. Some 10.2 million tons of crude were imported in 1968 compared with 7.5 million tons of crude imported in 1966. The crude petroleum produced in India in 1968 amounted to 7.3 million tons.

There is, therefore, an urgent need to develop indigenous sources of petroleum. Petroleum exploration in India is carried out by the GOI's Oil and Natural Gas Commission with assistance from the United Nations Development Program (whose Chief Geologist is Mr. N.A. Eremenko of the USSR), Oil India Limited (a 50-50 partnership between the GOI and the British owned Burman Oil Company), the Soviets (offshore seismic work), and the French.

Protracted negotiations have been going on for more than two years with a number of U.S. private sector oil companies interested in exploring several interesting offshore oil structures indicated by geophysical work along India's west coast. Other nations and companies have also evinced an interest in joining the Indians in some sort of a joint venture to drill these attractive anomalies.

There is no way of knowing how much, if any, oil is located beneath these geophysical signposts but it seems likely that one or more of the areas will be productive on a large scale. USAID should urge the GOI to make arrangements to get these areas explored. At present it seems likely that \$90 million per year of extra petroleum could be produced from deposits now under exploration on the continent and fairly likely that offshore production amounting to \$125 million annually could eventuate from offshore areas.

A target of this size deserves prompt decisions by the GOI at the highest levels.

B. Potash

The hope for a large domestic source of potash in India is in the discovery of a major deposit of marine evaporites. Almost all such deposits so far known in the world are large so that if potash is found in India at all the deposit is likely to be substantial.

South of Nagaur in Rajasthan is a large ancient rock embayment surrounded by algal reefs which might well be the locus of a potash ore body. Gypsum (often an indicator of potash-bearing evaporites) is present and widespread in this area and exploration of the area is recommended. This will be slow and expensive work since much of it will require the use of brine, kerosene, or air as a drilling medium to avoid dissolving highly soluble potash minerals.

So far similar areas in North America which have been discovered and developed were all found accidentally in the search for petroleum. However, exploration methods, interpretation of oil well logs, and the knowledge of evaporite geology are now much better known. We recommend

that the Geological Survey of India be urged to initiate an appropriate program for the Nagaur and other evaporite areas utilizing to a maximum extent knowledge and records accumulated by the Oil and Natural Gas Commission of India. The cost of such a program probably would not exceed \$2 million. Some U.S. technical assistance would be required for the exploration stage (especially drilling with lubrication and cooling provided by media other than water).

The chances that this project will be a success are only fair to poor but it is well worth the gamble since India will require about 30 million dollars worth of potash annually for the manufacture of fertilizers in the mid-1970s.

C. AID Financed Exploration Projects

1. Operation Hardrock. This project consists of an airborne geophysical survey of 44,000 square miles in three selected areas in India using magnetic, electromagnetic and scintillometric instruments. The aerial survey, completed in May 1968, has located more than 3000 potentially interesting anomalies. The prime objective of the operation is to find and delineate economic non-ferrous metal deposits which usually give exceptional response to the airborne instruments. Ground follow-up has commenced on the first of some 300 anomalies picked as first priority following studies of what is known of the underlying geology. Drilling of one sulfide deposit in Rajasthan has been underway for more than a month. The cost of the project is \$7 million of which \$3.5 million is foreign exchange financed by an AID loan. An important secondary objective of "Operation Hardrock" is the training of Indian technicians in (a) practical team work approach to exploration, and (b) rapid diamond core drilling, which appears to be a weak sector in the Indian exploration art.

2. Operation Softrock. The objective of this project, whose foreign exchange requirements are financed by \$283,000 from AID's Consulting Services Loan, is to find sufficient marine phosphorite in India to supply indigenously the growing requirements of India's fertilizer industry. India is now well on the way to reaching this objective. Beneficiation tests on samples of low grade phosphorite **should** be completed and engineering studies made to permit more precise cost estimates on the various phosphate deposits. At this point the exploration stage is nearly completed and the development of known deposits should get underway as soon as possible. (See Section IV-F above.)

VI. NEED FOR ASSIGNMENT OF PRIORITIES

There are numerous economically viable mineral deposits in India and even though their development is not capital intensive, the scarcity of foreign exchange and the multiplicity of India's development needs require careful choice of only the highest priority projects.

To grade each project correctly, analysis should include (a) comparison of internal rate of return, (b) foreign exchange earning/saving, (c) how soon after investment financial returns come in, and (d) the impact of the project on plant location decisions.

Based on this type of analysis projects like the Kudremukh iron ore export venture would receive high development priority. Both Japanese and U.S. private firms are willing to invest in the project which projects a high rate of return. The first phase production of 4 million tons of iron ore pellets should bring in \$36 million in foreign exchange, thus paying back the foreign exchange investment in less than one year of full production. As the ore is recoverable by open pit mining, the project lead-time would be shorter than the Rakha Copper or Agnigundula Copper lead project. This project, then, should command very high priority from the GOI and AID. It is now at the pilot plant stage but financing of development for commercial production has not yet been arranged.

Similarly the construction of harbor facilities at Vishakhapatnam to load Bailadila iron ore into 100,000 (+) dwt. iron ore carriers at more than 6,000 tons per hour would provide the needed linkage of the excellent Bailadila ore to low cost transport. This project should be put in hand at the earliest possible moment. Indications are that the Japanese would be willing to increase their purchases (now about to move upward from 2 million tons to 4 million tons per year) to a ceiling of some 12 million tons per year from this mine if the low cost shipping facilities which would increase Bailadila's foreign exchange earnings by \$72 to 90 million were installed by the mid 1970s.

Engineering studies followed by development expansion of the very large lead-zinc deposits at the Zavar Mines in Rajasthan would go far toward meeting India's lead-zinc requirements and the technical expertise required is being developed by the small scale operations there now. Some expansion is now underway but all indications are that even this could be substantially increased.

The Agnigundula lead-copper deposit in Andhra Pradesh, being a new mineral combination for Indian mining, might well benefit from U.S. technical cooperation and indeed it is understood that the GOI is seeking a U.S. joint venture partner for this project. AID should

assist the GOI in its efforts to secure a reliable U.S. copper mining firm as a partner and give serious consideration to an Extended Risk Guarantee or to a direct AID loan to provide the necessary foreign exchange financing.

Because of India's dependence on foreign sources of sulfur at a time when vital fertilizer projects are being undertaken, the Saladipura pyrite project in Rajasthan should receive high priority. The capital investment for the mine and roasting plant is estimated at \$26 million, of which \$12 million would be foreign exchange. At a production rate of 720,000 tons per year this would provide a foreign exchange savings of \$34.6 million per year by the mid-1970s if the price of imported sulfur remains about \$48.00 per ton. At this rate savings equal to the foreign exchange investment in the project would accrue in about four months. The advantage of a rapid return of the foreign exchange input is partly offset, however, by the long lead time (five to seven years) required to develop the mine and ancillary pyrite roasting facilities.

The Rakha mining area in Bihar has been explored and various mining plans considered. Present GOI planning is to mine three blocks of ore simultaneously with an output which will result in a foreign exchange saving of \$14.7 million yearly. It may be possible to increase the mining rate to 3 million tons and save \$44.4 million per year. Preliminary estimates place the cost of the larger project at \$160 million of which \$48 million is foreign exchange. Again, the foreign exchange input could be earned by the project in approximately a year's production, but the project will take seven years to reach this higher rate of production.

Projects for petroleum exploration and production with U.S. oil companies as partners with the GOI would be privately financed. Extended Risk Guarantees would make the environment more attractive for U.S. capital. India needs a reliable domestic supply of petroleum for industry and defence. In addition widespread production will allow more economical location of upcoming fertilizer plants which are heavy users of petroleum products.

India's needs are primarily in the area of development of known deposits. As far as exploration is concerned only oil exploration should be increased in personnel, equipment, and financing. In the field of ferrous and nonferrous metals the present exploration programs such as "Operation Hardrock" should be followed to their conclusion, but in general the emphasis in exploration for ore deposits should be shifted to development drilling of known or partly known deposits rather than areal or "wildcat" exploration. This shift in emphasis will have the effect of shifting the work load from the Geological Survey of India and placing it in the hands of the governmental and private sector mining

corporations responsible for mining it. The engineering and geological staff and equipment of such GOI enterprises as the National Mineral Development Corporation, Hindustan Zinc Limited, Hindustan Copper Ltd., the Pyrites, Chemicals and Phosphate Development Corporation and others should expand to expedite the tasks of development drilling and metallurgical testing which should be assigned to them. Petroleum is the only mineral resource where a major increase in the tempo and quantum of exploration is required.

VII. POSSIBILITIES FOR SPEEDING DEVELOPMENT

The Industrial Policy Resolution of 1956 puts the mining of iron ore, manganese ore, chrome ore, gypsum, sulfur, gold and diamonds, copper, lead, zinc, tin, molybdenum and wolfram (tungsten) as well as atomic energy minerals into the category of industries whose future development will be the exclusive responsibility of the State. Hitherto it was assumed that the Resolution precluded new private sector mining ventures. However the following sentence quoted from the Resolution offers hope for sound joint mineral ventures involving private sector companies: "This does not preclude the expansion of the existing privately owned units, or the possibility of the State securing the cooperation of private enterprise in the establishment of new units when the national interests so require."

In the case of the Kudremukh iron ore project, it was this escape clause which permitted the GOI to allow development of the large Mysore iron deposit by a joint group composed of Marcona Corporation of San Francisco (25% interest), a group of Japanese trading companies (24% interest) and the National Mineral Development Corporation (a GOI enterprise). This type of joint venture is very like the ONGS-Burmah Oil venture which is a 50-50 collaboration. Another precedent may have been established by the Maharashtra Minerals Corporation which is owned 26% by the State and 74% private Indian capital. If these ventures are successful, and so far they are, it would confirm the view of many observers that increased participation by the private sector in new mining enterprises would broaden the financial base of the mining industry and accelerate development.

Development can also be speeded by according the management of the public sector mining corporations more latitude in decision making. The difficulties in reaching decisions are compounded when two or more ministries are involved. This has adversely affected iron ore export where the Ministry of Petrochemicals, Mines and Metals is responsible for mining the ore, the Ministry of Railways transports the ore from the mines to the ports, the Transport Ministry loads the ore on board ships and the Minerals and Metals Trading Corporation of the Ministry of Commerce sells the ore. With so many agencies involved it is surprising that the iron ore export industry had done as well as it has.

A major hindrance to mineral exploration is the security regulation restricting the availability of such necessary geological tools as aerial photographs and topographic and geologic maps. USAID's efforts to convince the GOI Cabinet that such regulation hinders the training for and execution of vital mineral exploration should continue. The difficulties in obtaining up-to-date geological maps, reports and aerial photos in India make it advisable to train a substantial number of Indian earth scientists abroad. Similarly the scarcity of active underground base metal mines points to the advisability of training large numbers of mining engineers and managers in on-the-job work in the U.S. or other countries. As India accelerates her base metal mining development, the need for trained metal mining technicians will increase rapidly and it will be a major problem, soluble only if trained technicians are able to utilize the latest mining techniques.

Iron mines could be made more efficient if "blue dust" and other forms of iron ore fines making up about one-half of the total tonnage mined could be pelletized instead of being largely cast aside as is now the practice.

Manganese ore producers are plagued by large volumes of low grade material which is slightly below market standards. Beneficiation studies of these low grade manganese ores should be undertaken on a massive scale.

The private sector mining industries in India have been neglected and have substantial financial needs for development, as shown in studies by the States Ministries of Mining and Geology, a sub-committee of the Mineral Advisory Board and the Federation of Indian Mineral Industries, as summarized in Table 7.

In addition, the Federation of Indian Mineral Industries estimates that in order to maintain production in the private sector mining industry, the following financing is needed:^{1/}

	<u>Millions of Dollars</u>
Iron Ore	20
Manganese ore	7
Mica	3
Non-ferrous ore	7
Other minerals: such as chrome ore, kyanite, bauxite, magnesite, etc.	<u>7</u>
Total:	44

^{1/} FIMI, quoted in Crammer, T.L., Annex G, 1967 Program Memorandum, p. 18.

Table 5

Funds Needed by Private Sector Mining Companies to Achieve
Additional Production ^{a/}

Item	Study group set up by Ministry of Mines		Sub-Committee of the Mineral Advisory Board		F.I.M.I.	
	Amount (million dollars)	Added production (million tons)	Amount (million dollars)	Added production (million tons)	Amount (million dollars)	Added production (million tons)
Iron Ore	33	4	43	5.6-6.1	63	8
Manganese Ore	7	0.7	5 - 7	0.6-0.7	27	1.5
Mica	3		3 - 4		7	
Other Minerals	7		Not considered		20	
Non-Ferrous Ore	7		Not considered		7	
Coal	Not considered		Not considered		60	

^{a/} Cranmer, T.L., Annex G, 1967 Program Memorandum, p. 18.

The needs of the mining industry have not been met because (a) development banks and commercial banks regard the industry as an unusually hazardous venture, and (b) most mines are on leased property, and the credit institutions are forbidden to make loans on leasehold interests.

We recommend that:

- (1) the credit guaranty scheme, which gives incentives to banks to lend to small scale industries, be extended to cover the mining industry.
- (2) Rule 37 of the Minerals Concession Rules, 1960 be amended to allow a mine owner to mortgage his leasehold interest.
- (3) the possibility of setting up a mining bank or a mining finance corporation which extends credit to mine owners be explored.

India has very extensive proven reserves of iron ore and many undeveloped deposits of nonferrous metals. Further development of India's ferrous and nonferrous metal resources would both earn and save large amounts of foreign exchange—earnings primarily from exports of iron ore and savings from reduction and eventual elimination of imports of copper, lead and zinc. Substantial foreign exchange savings can also be realized from indigenous production of phosphate and sulfur for the fertilizer industry. Added to this will be savings from the extraction of crude petroleum both on the Indian subcontinent and offshore.

The extent to which these earnings and savings can be realized will be a major factor in the economic development of India. AID's role in promoting the development of India's mineral resources should be to continue to provide technical and financial assistance and if in its judgment mineral development lags unduly, to adjust production loans and/or urge Consortium accord so as to induce appropriate action.

COUNTRY FIELD SUBMISSION

FY 1971

INDIA

ANNEX M

MOBILIZATION OF DOMESTIC RESOURCES

September 1969

ANNEX M

MOBILIZATION OF DOMESTIC RESOURCES

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ANNEX M

MOBILIZATION OF DOMESTIC RESOURCES

1. Aggregate Savings and Investment

Although foreign aid makes a key contribution to the financing of India's development, the great bulk of development outlay must be made out of internal resources. The rate at which development progresses will, therefore, depend to a large extent on the increase in domestic saving generated by the Indian economy.

Given the country's growth targets and development outlay requirements, the estimated need for foreign aid to support a given rate of development depends primarily on the extent to which internal savings are expected to grow and secondarily on their pattern of mobilization. In projecting India's resource mobilization prospects for the Fourth Plan, USAID's view of India's ability to save increasing proportions of rising income is less sanguine than the Planning Commission's. The resulting difference in savings projections explains part of the difference in aid requirements as estimated by the Planning Commission and as estimated by USAID.

For financing the investment levels targeted for the Fourth Five Year Plan (1969/70 - 1973/74), as pointed out in Table 2 of Annex D to this CFS, the Plan document calls for an average increase in domestic savings of 12.5 percent per year from 1967/68 to 1973/74. With a projected average annual increase in the net domestic product (NDP) at market prices in the neighborhood of 5.5 percent, the aggregate marginal savings rate from 1967/68 to 1973/74 implied by the Planning Commission's targets comes to 21.9 percent. The aggregate marginal savings rate used in making the USAID projections from 1969/70 for the 5.5 percent growth case (Annex A, Table 1) is only 17.3 percent. During at least one period in the recent past, namely the first 4 years (1961/62 - 1964/65) of the Third Plan, the Indian economy did generate marginal savings rates of the same order of magnitude as those projected for the Fourth Plan by the Planning Commission. The latter are, therefore, not in themselves beyond achievement; but there is little in the Fourth Plan document to indicate the mechanisms by which the economy is to achieve the overall saving targets or, more specifically, to channel private savings into private sector investments.

The Fourth Plan document has proposed a total Plan outlay of Rs. 24,398 crores, of which 15 percent (Rs. 2,146 crores) is current Plan outlay of the public sector. The investment component of Rs. 22,252 crores includes Rs. 12,252 crores of public sector Plan investment and Rs. 10,000 crores of private sector investment. In the global pattern of financing of public and private sector investment (see Table 1) projected in the Plan document, domestic saving (net of interest payments on foreign debt) covers 89 percent of total investment, the remainder coming from external assistance (net of repayment of principal on foreign debt). Of public sector investment, 47 percent is to be financed by savings of the public sector after payment of interest on foreign debt, 32 percent by the public sector's draft on private saving, and 21 percent by external assistance net of principal repayments. The public sector's draft on private saving is projected at 28 percent of total private saving.

The real domestic resource problem is how to increase the savings of both the public and the private sectors. The major concern of the authors of the Plan document is, however, only the financing of the public sector's Plan outlay, through direct public sector saving and through the public sector's draft on private saving, while its analysis of private sector saving and investment is pretty thin.

An appraisal of the resource mobilization or saving effort in the context of proposed investment and development targets is hampered by the absence of consistent and up-to-date statistical series on saving and investment. Without the Perspective Planning Division's still unpublished background papers it is, for example, impossible to guess what numbers underlie the Planning Commission's projections. In assessing the Plan's resource magnitudes in terms of past trends, we have, however, made use of a recent set of provisional estimates of savings prepared by the Central Statistical Organization.

The total of domestic saving built up from savings data is normally not the same as the figure derived as the residual between net investment at market prices and the net foreign balance. This is also true in the case of the financing discussion in the Plan document, which uses figures derived in an unspecified fashion from savings data generated by the Reserve Bank of India. According to the Plan document, total domestic saving is to rise at 13.2 percent per year, a much faster rate than the national income (net national product at factor cost). Total domestic saving is, thus, to increase

Table 1

Fourth Plan (1969/70 - 1973/74): Investment and its Financing by Sector

(Rs crores and percent)

<u>Sources of financing</u>	<u>Private sector investment</u>	<u>Public sector investment</u>	<u>Total investment</u>
A. Rs crores:			
Domestic saving	9,970	9,738	19,708
Private sector saving	9,970	3,930 ^{a/}	13,900
Public sector saving	-	5,808	5,808
External assistance (net of principal repayments)	30	2,514	2,544
Total financing	<u>10,000</u>	<u>12,252</u>	<u>22,252</u>
B. Percent:			
Domestic saving	99.7	79.5	88.6
Private sector saving	99.7	32.1 ^{a/}	62.5
Public sector saving	-	47.4	26.1
External assistance (net of principal repayments)	0.3	20.5	11.4
Total financing	<u>100.0</u>	<u>100.0</u>	<u>100.0</u>

Sources: Fourth Five Year Plan, 1969-74 (Draft), pp. 90, 94-95; and Planning Commission. For derivation, see Appendix Tables 1-3 below.

^{a/} Public sector draft on savings of private sector.

from Rs. 2,234 crores in 1967/68 to Rs. 4,801 crores in 1973/74, ie. from 8.0 percent of the national income in 1967/68 to 12.6 percent in 1973/74. Compared with the increase in national income, this set of figures gives a projected marginal saving rate of 25.2 percent (see Table 2). Within the total, corporate saving is supposed to rise at the same rate as the national income, remaining at 1.1 percent of the national income. Savings of households are to rise by 9.5 percent per year. Public sector savings are to rise by an almost identical absolute amount as savings of households; but since the base is small, the implied growth rate for public sector saving is about 37 percent per year.

2. Public Sector Resource Mobilization

Total Plan outlay in the public sector, including current outlay, is placed at Rs. 14,398 crores for the Fourth Plan period. Excluding net inflow of foreign assistance, Rs. 11,884 crores will have to be raised from domestic sources, as shown in Table 3. Budgetary surpluses from current revenues, market borrowings, small savings, additional taxation and deficit financing are expected to provide the necessary resources to meet the target. Budgetary resources at existing levels of taxation are estimated at Rs. 8,325 crores or 70 percent of the total of Rs. 11,884 crores from domestic sources. The balance of Rs. 3,559 crores, which is the resource gap, will be made up by additional taxation of Rs. 2,709 crores and Rs. 850 crores of deficit financing.

A comparison of the major sources of financing public sector outlay in the Fourth Plan with the actual results for earlier Plan periods is presented in Table 4.

Mobilization of budgetary resources of the order of Rs. 10,839 crores (including Rs. 2,514 crores of net foreign aid receipts) depends primarily on obtaining a Rs. 2,455 crores surplus from current revenues and Rs. 1,895 crores of contributions from public enterprises in addition to net receipts from external assistance. This is by no means a simple task, considering the record so far of the Central and State governments' ability to generate surpluses from current revenues after providing for non-plan expenditures. Continuing pressures from non-plan demands such as government employees' wages and allowances,

Table 2

Domestic Saving 1967/68 and 1973/74 (Fourth Plan Estimates)

(Rs crores and percent)

	<u>Rs crores</u>			<u>Percent</u>		
	<u>1967/68</u>	<u>1973/74</u>	<u>Incre- ment</u>	<u>1967/68</u>	<u>1973/74</u>	<u>Incre- ment</u>
Households	1,704	2,934	1,230	6.1	7.7	12.1
Operations	307	419	112	1.1	1.1	1.1
Public sector	223	1,448	1,225	0.8	3.8	12.0
Total domestic saving	2,234	4,801	2,567	8.0	12.6	25.2
<hr/>						
Net domestic product at factor cost (National income)	27,930	38,100	10,170	100.0	100.0	100.0

Source: Fourth Five Year Plan 1969-74 (Draft): percentages in Table 7 of chapter 2 (p. 42) applied to figures on national income in Table 9 of chapter 3 (p. 58).

Table 3
 Financing of Public Sector Plan Outlay ^{a/}
 (Rs crores and percent)

<u>Sources of financing</u>	<u>Rs crores</u>	<u>Percent</u>
1. Current account surplus of government agencies	<u>4,909</u>	<u>34.1</u>
a. Balance from current revenues at current rates of taxation	2,455	17.1
b. Additional taxation <u>b/</u>	2,454	17.0
2. Surplus of public sector enterprises	<u>1,895</u>	<u>13.1</u>
a. Contribution of Railways	265	1.8
b. Surplus of public sector enterprises	1,465	10.2
c. Reserve Bank profit	165	.1.1
3. Draft on savings of private sector (gross of miscellaneous capital receipts)	<u>4,230</u>	<u>29.4</u>
a. Loans from public (net)	1,166	8.2
b. Small savings	800	5.5
c. Annuity deposits, CDS <u>c/</u> , prize bonds, gold bonds	- 104	-0.7
d. State provident funds	640	4.4
e. Miscellaneous capital receipts (net)	1,130	7.8
f. LIC <u>d/</u> loans to State housing schemes	96	0.7
g. LIC <u>d/</u> loans to State enterprises	116	0.8
h. Market borrowing by State enterprises	131	0.9
i. Rural debentures <u>b/</u>	255	1.8
4. Deficit financing	<u>850</u>	<u>5.9</u>
SUB-TOTAL: Internal resource mobilization	<u>11,884</u>	<u>82.5</u>
5. External assistance	<u>2,514</u>	<u>17.5</u>
a. PL 480	380	2.6
b. Other (net of loan repayments only)	2,134	14.8
TOTAL	<u>14,398</u>	<u>100.0</u>

a/ Revision of CFS FY 1971 Annex D, Table 11

b/ Components of Plan item "additional resource mobilization":

Additional taxation	2,454
Rural debentures	<u>255</u>
Additional resource mobilization	2,709

c/ CDS = Compulsory Deposit Schemes

d/ LIC = Life Insurance Corporation

Source: Fourth Five Year Plan 1969-74 (Draft), pp. 82-83.

Table 4

Resources for Public Sector Plans

(Rs crores)

	First Plan 1951/52- <u>1955/56</u>	Second Plan 1956/57- <u>1960/61</u>	Third Plan 1961/62- <u>1965/66</u>	Annual Plans 1966/67- <u>1968/69</u>	Fourth Plan 1969/70- <u>1973/74</u>
Total outlay	<u>1,960</u>	<u>4,672</u>	<u>8,577</u>	<u>6,756</u>	<u>14,398</u>
Surplus from current revenues	<u>382</u>	<u>11</u>	<u>- 419</u>	<u>362</u>	<u>2,455</u>
Contribution of public enterprises	<u>115</u>	<u>167</u>	<u>435</u>	<u>348</u>	<u>1,895</u>
Railways	115	167	62	- 119	265
Others	-	-	373	467	1,630
Draft on private savings	<u>686</u>	<u>1,439</u>	<u>2,113</u>	<u>1,694</u>	<u>3,975</u>
Public loans a/	204	756	823	637	1,509
Small savings	243	422	682	391	696
Unfunded debt, provident funds, and misc. capital receipts	239	261	608	666	1,770
External assistance (net)	<u>189</u>	<u>1,049</u>	<u>2,423</u>	<u>2,655</u>	<u>2,514</u>
Total budgetary resources at existing levels of taxation	<u>1,372</u>	<u>2,666</u>	<u>4,552</u>	<u>5,059</u>	<u>10,839</u>
Resources gap	<u>688</u>	<u>2,006</u>	<u>4,025</u>	<u>1,697</u>	<u>3,559</u>
<u>Financed by:</u>					
Additional resource mobilization	255	1,052	2,892	907	2,709
Deficit financing	333	954	1,133	790	850

a/ Including loans from Life Insurance Corporation to State governments and State enterprises and market borrowings of State enterprises.

Sources: First and Second Plans: Economic Times Research Bureau, "Delicately Balanced Resources Position", Economic Times, July 10, 1969.

Third Plan, Annual Plans, and Fourth Plan: Planning Commission, Fourth Five Year Plan 1969-74 (Draft), pp. 78, 80-83.

relief expenditures in areas affected by natural calamities, defense build-up, interest obligations, etc. introduce a severe strain on government resources. To illustrate, the central government budget, which traditionally has been having a fair amount of surplus on current account, for the first time shows a deficit on current account in the estimates for 1969/70. Similarly, the State governments which used to make their best efforts to balance their revenue budgets have piled up huge deficits on current account for the years 1968/69 and 1969/70. Similarly the public sector undertakings as a group have not contributed significantly to the budgetary resources of central and state governments. Of course there have been exceptions such as the railways (until a couple of years ago). Viewed in this light, generation of financial resources from these sources in the amounts anticipated in the Draft Plan will require considerable effort and financial discipline on the part of the central and state governments themselves and also the departmental and non-departmental undertakings of central, state and local levels.

The Fourth Plan calls for a surplus from current revenues, at existing rates of taxation, of Rs. 2,455 crores or an annual average of Rs. 491 crores. Such a result would be in sharp contrast with earlier periods, as shown in Table 4: the surplus from current revenues was negligible during the Second Plan, it was a deficit during the Third Plan and about Rs. 120 crores a year during 1966/67 - 1968/69.

Among the public enterprises, the railways, posts and telegraphs, other central government enterprises and the state electricity boards are the major contributors. The estimated receipts from these sources in 1968/69 and during the Fourth Plan period are as shown below (in Rs. crores):

	<u>1968/69</u>	<u>Fourth Plan (annual average)</u>
Contributions of:		
Railways	21	51
Posts & Telegraphs	18	45
Other Central Government enterprises	108	137
State Electricity Boards	76	103
Other state undertakings	n. a.	8

A very significant improvement in the performance and profitability of the public sector enterprises as a whole will have to be accomplished if resources of the size comparable to what the Fourth Plan draft has assumed are to be mobilized from this sector. The Draft Plan hardly provides a convincing answer to the question whether this kind of a transformation in their performances can be achieved in a short time-span of five years.

The public sector's draft on private savings includes market borrowings of Central and State governments, borrowings of State governments and State enterprises, market borrowings of State enterprises, small savings, and unfunded debt of the Central and State governments. During the Third Plan these sources provided an average of Rs. 425 crores a year and in the subsequent three years an average of Rs. 565 crores a year. The Fourth Plan draft assumes that there will be considerable improvement in the net receipts from these sources and estimates that Rs. 795 crores a year can be mobilized from public loans, small savings, provident funds, etc. This means an increase of 40 per cent over the average yield during 1966/67 - 1968/69.

The estimate of Rs. 2,709 crores of additional resource mobilization is conservative when compared with the Rs. 2,892 crores of revenue from additional taxation realized during the Third Plan period. In the subsequent three years through 1968/69, further additional taxation of about Rs. 900 crores has been realized.

A vital factor in government's ability to carry on its program of expanding the tax net, will be the "limit" of taxation, if any, that the economy can absorb. Here we are concerned with additional sources of tax revenue both by way of raising existing rates and expanding the list of taxable entities, rather than the built-in buoyancy of tax revenues in relation to growth in income and output.

The Fourth Plan lays considerable stress on the crucial role of taxation of the agricultural sector which is beginning to reap the fruits of new technology, productivity increases, and price guarantees. A general contention is that a new well-to-do class of farmers has emerged in the rural areas and it should be made to give a share of its new prosperity to the public exchequer. There is then the call to introduce agricultural income tax (where it has not been imposed so far) and attempt to bring about

some sort of parity in tax burden between the urban and the rural sectors. This is not a new slogan. Attempts have been made in the past to pull the agricultural sector into the tax net, but a number of practical difficulties have been encountered in the process, so much so that the efforts have not succeeded in going much beyond the "proposal" stage. For one thing, it is the state governments which should implement the program, but because of the political power of the landowning groups in the State legislatures, the State governments have shown considerable reluctance to introduce a new tax or expand an existing tax on agriculture. Agricultural income tax is one of the most stagnant taxes, and yields only about 1 percent of the total tax revenues of the states. Compared to this, land revenues are a little more buoyant, but their share in total state taxes has fallen from about 22 percent in 1961/62 to 9.4 percent in 1968/69, because of the rapid rise in the yields from other taxes, especially the sale taxes, motor vehicles tax, entertainment tax, etc.

Besides these two taxes on agriculture, the Fourth Plan relies mainly on commodity taxation -- customs, excise as well as sales taxes -- to mobilize the five year target of Rs. 2,709 crores. These taxes have been fairly elastic and should continue to be so in the Fourth Plan. But the nature and coverage of the additional tax net has not been clearly spelt out in the Plan document. Other tax measures contemplated are fuller coverage of income and wealth taxes, a higher tax burden on people in the "middle-income" bracket, 1/ and an urban property tax.

The additional taxation goals should not encounter insurmountable obstacles, provided the State governments, on whom a major share of responsibility lies and who have all along been reluctant to introduce new taxes -- particularly on agriculture -- show a keener appreciation of the urgency and importance of the need to raise additional resources. On the basis of the level of resource mobilization anticipated from budgetary sources and public enterprises, deficit financing in the public sector is estimated at Rs. 850 crores. This appears to be an extremely modest estimate if the experience of the recent years is taken into account (see Table 4). However, in view of the likely shortfalls in "surplus from current revenues" and "contributions from public sector undertakings," a much higher level of

1/ In the Indian context, this would mean an income range of approximately Rs. 7,000 - 25,000 (\$930 - 3,300) per annum.

deficit financing might be necessary. It may very well turn out to be in the range of Rs. 1,500 - 2,000 crores or an average Rs. 300 - 400 crores a year during the Fourth Plan. The current year's budgets of the central and state governments (1969/70) indicate a total deficit of about Rs. 450 - 500 crores, when the public sector plan outlay is estimated at only Rs. 2,300 crores, lower than the average annual outlay of about Rs. 2,879 crores assumed in the Plan.

3. Private Sector Savings

Savings Trends

There are two reasons why any attempt to forecast the volume of voluntary savings and their allocation among different forms of investment during the Fourth Plan period is an uninviting task. Firstly, as justly remarked by the planners, there are no firm estimates of private savings in India. Such estimates as exist are examined below. Secondly, both their volume and their utilization are obviously dependent on government policy, the course of which is at this stage by no means clear.

An estimate of savings by categories since 1960/61 is presented in Table 5. From the viewpoint of this analysis, the most interesting features of the figures are the falling shares of government and corporate savings in the total and the rising shares of individual savings, both financial and physical, particularly the latter.

The nature of individual financial savings is also of considerable interest. Unfortunately we have no details later than 1965/66, but it seems likely that there has been no subsequent reversal of the trends discernible in the figures for 1960/61 to 1965/66 given in Table 6. They show that individual financial savings increased from Rs. 466 crores in the first year of the Third Plan (1960/61) to Rs. 911 crores in the last year (1965/66, or by Rs. 445 crores. Of this total the increase in currency holdings accounted for Rs. 179 crores and increase in net deposits (in commercial banks, co-operatives and non-banking companies) accounted for another Rs. 205 crores, or Rs. 388 crores together, or 87 percent of the total. Investment in provident funds, which is largely forced saving in India, increased by Rs. 98 crores and in life insurance, which has been nationalized since 1956, by Rs. 30 crores. As to government securities there was an increase in disinvestment from Rs. 20 crores to Rs. 31 crores. Thus the increase in

Table 5

Sources of Savings in India, 1960/61 - 1967/68

A. Rs. crores at current prices

	Individual financial	Individual physical (net)	Total individual (1) + (2)	Corporations	Total private (3) + (4)	Government	Total net saving (5) + (6)
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
<u>CSO estimates:</u>							
1960/61	402	342	744	128	872	309	1,181
1961/62	466	414	880	148	1,028	359	1,387
1962/63	507	542	1,049	148	1,197	394	1,591
1963/64	691	426	1,117	185	1,302	515	1,817
1964/65	771	971	1,742	114	1,856	564	2,420
1965/66	911	880	1,791	122	1,913	543	2,456
Third Plan total (1961/62 - 1965/66)	3,346	3,233	6,579	717	7,296	2,375	9,671
<u>IBRD estimates:</u>							
1966/67	825	822	1,647	105	1,752	405	2,154
1967/68	901	1,100	2,001	100	2,101	307	2,408
<u>Planning Commission estimates:</u>							
1967/68	n.a.	n.a.	1,704	307	2,011	223	2,234
1973/74	n.a.	n.a.	2,934	419	3,353	1,448	4,801
Fourth Plan total (1969/70 - 1973/74)	n.a.	n.a.	12,040	1,860	13,900	5,808	19,708

Table 5 (cont'd)

Sources of Savings in India, 1960/61 - 1967/68

B. Percent of total net saving

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	Individual financial	Individual physical (net)	Total individual (1) + (2)	Corporations	Total private (3) + (4)	Government	Total net saving (5) + (6)
<u>CSO estimates:</u>							
1960/61	34.0	29.0	63.0	10.8	73.8	26.2	100.0
1961/62	33.6	29.8	63.4	10.7	74.1	25.9	100.0
1962/63	31.9	34.0	65.9	9.3	75.2	24.8	100.0
1963/64	38.0	23.4	61.4	10.2	71.6	28.4	100.0
1964/65	31.9	40.1	72.0	4.7	76.7	23.3	100.0
1965/66	37.1	35.8	72.9	5.0	77.9	22.1	100.0
Third Plan total (1961/62 - 1965/66)	34.6	33.4	68.0	7.4	75.4	24.6	100.0
<u>IBRD estimates:</u>							
1966/67	38.2	38.1	76.3	4.9	81.2	18.8	100.0
1967/68	37.4	45.7	83.1	4.2	87.3	12.7	100.0
<u>Planning Commission estimates:</u>							
1967/68	n.a.	n.a.	76.3	13.7	90.0	10.0	100.0
1973/74	n.a.	n.a.	61.1	8.7	69.8	30.1	100.0
Fourth Plan total (1969/70 - 1973/74)	n.a.	n.a.	61.1	9.4	70.5	29.5	100.0

Sources:

CSC estimates: Central Statistical Organization, provisional estimates.

IBRD estimates: IBRD Mission, New Delhi.

Planning Commission estimates:

1967/68 - 1973/74: Table 2 above.

Fourth Plan total: Table 1 above and Appendix Table 2 below.

Table 6

Individual Financial Savings, 1960/61 - 1965/66

(Rs crores)

	<u>Currency</u>	<u>Net deposit</u>	<u>Investment in shares debentures</u>	<u>Net claims on Govern-ment</u>	<u>Life Insu-rance funds</u>	<u>Provident funds</u>	<u>Total</u>
1960/61	149	5	38	26	50	134	402
1961/62	93	69	121	-20	65	138	466
1962/63	140	122	40	-48	65	158	507
1963/64	208	43	159	15	78	188	691
1964/65	145	316	61	-55	88	216	771
1965/66	272	274	65	-31	95	236	911

Source: Central Statistical Organization provisional estimates.

what may be termed government-controlled private savings was Rs. 97 crores, and the share of these in total private financial savings fell from 35 to 33 percent, in spite of official efforts to attract savings and official monopoly of life insurance. At the same time there was a drastic decline in the share of investment in the private corporate sector, from 26 percent to 7 percent.

The analysis can be carried a step further. Table 7 shows a breakdown of net deposits (deposits less advances) by class of institutions. From this it can be seen that the increase of Rs. 205 crores from 1961/62 to 1965/66 was made up of an increase of Rs. 234 crores in deposits in commercial banks and non-banking companies and an increase in the excess of advances over deposits in cooperatives of Rs. 29 crores. Thus, the cooperative financial sector failed to attract deposits sufficient to finance its own expansion and became increasingly dependent on government funds or funds channeled to it under government pressure.

All this seems to indicate an increasing reluctance on the part of individuals to invest voluntary savings in government securities or institutions or in long-term private corporate securities. Savings have been kept increasingly in liquid or near-liquid form or have been used increasingly for direct investment.

The effect on investment is difficult to estimate. Almost certainly there has been a weakening of government control over utilization of savings, which does not, of course, mean that they have necessarily been used for less productive purposes than would otherwise have been the case. Some of the direct investment was certainly in agriculture and small business. Much of it, however, may have been devoted to "high-class" housing, "luxury" services, and expansion of the overcrowded and inefficient retail trading business.

Influence of Rates of Return on Voluntary Savings

Discussion of investment resources in India tends to be mostly concerned with their allocation between different sectors and sub-sectors of the economy. The problem of increasing their volume, at any rate from domestic sources, receives less attention. Indian policy appears to be guided by the belief, on the one hand, that artificially cheap money is essential to investment and, on the other hand, that the rate of return on savings

Table 7

Annual Addition to Net Deposits of Individuals 1960/61 - 1965/66

(Rs crores)

	<u>Commercial banks</u>	<u>Cooperatives</u>	<u>Non-banking companies</u>	<u>Total</u>
1960/61	22.9	-27.7	9.9	5.1
1961/62	106.4	-46.6	9.0	68.8
1962/63	152.5	-43.3	12.5	121.8
1963/64	63.0	-42.6	22.3	42.7
1964/65	545.4	-51.4	22.1	316.1
1965/66	322.7	-75.5	26.9	274.1

Source: Central Statistical Organization, provisional estimates.

does not affect their volume. While it is recognized that the ratio of savings to national income varies, this seems to be attributed solely to variations in national income, acting through marginal propensities to save that function automatically.

Given the economic and financial structure of India this belief is up to a point well founded. The Government has (according to the Planning Commission's estimates) for long been a much larger investor in large scale industry and mining than the private sector, and the volume of its investment depends to some extent on its ability to get money cheaply. Its first recourse is to taxation and deficit financing, in other words forced saving. But the accessible sources of taxes dry up and printing-press financing becomes self-defeating beyond a point that is rather quickly reached. So the Government also borrows. Domestically it has various sources of cheap funds, which can be described as quasi-forced savings. These include provident funds of public employees, post-office savings deposits, the nationalized Life Insurance Corporation monopoly, 1/ and statutory reserve requirements of private commercial banks.

As to the private sector, even before the recent nationalization of the commercial banking system (more precisely, the fourteen leading commercial banks), the Government had extensive power to control lending rates of commercial banks and other financial institutions and, by various devices and pressures, to direct credit into channels it favored at any particular time. The private sector financial institutions are, in fact, regarded as an instrument, even if somewhat blunt-edged, of government policy, to be used to further economic plans in areas where direct government action is not considered feasible. This is reflected in government dealings with credit institutions.

Nevertheless there is a substantial volume of savings over which the Government has little or no control and which gravitate toward the most lucrative forms of investment available at the time. The amount of such savings has only a tenuous connection with national income variations and propensities to save. It depends rather on the existence of profitable opportunities and on expectations regarding inflation. Some of these savings

1/ As of March 31, 1968, out of the LIC's investment of approximately Rs. 1,120 crores over 80 per cent was in the public sector and the cooperatives.

consist of what is known in India as "black money", that is illicit earnings of various kinds, particularly gains for which the network of government controls and licensing provides opportunities, as well as other income concealed from the taxgatherer.

The desirability of channeling voluntary savings as far as possible into financial institutions, including the stock exchange, is unlikely to be seriously disputed. Such institutions, if well run, provide the most economical and efficient means of directing savings into investment. But the mere existence of such institutions will not by itself attract savings if the rate of return is low relative to that obtainable elsewhere.

At the present time a larger volume of voluntary savings than for some years past is finding its way into regular savings and investment channels. Time deposits in commercial banks have risen sharply during the past year, while the equity share price index increased almost continuously in the nine months ending June 1969, with a 25 percent rise for the period as a whole. This kind of bullish behavior represented a significant and encouraging departure from the sluggish condition of the recent years. The recovery in the share market started gaining momentum in the latter half of last year and it was only this year, in May 1969, that the share price index crossed, for the first time in eight years, the 1961 peak of 131.3. Trading conditions were exceptionally good this year up to mid-June when the government ban on forward trading in shares was announced. The subsequent weeks witnessed a precipitous fall in share prices and the equity index tumbled down from the high 145 of mid-June to 130 at the end of August. The public enthusiasm for equity investment may have been somewhat dampened by the recent nationalization of major commercial banks, the Government of India's rather favorable reaction to the recommendations of the Industrial Licensing Policy Enquiry Committee (the Dutt Committee), the Monopolies Commission bill in Parliament, and the inquiry initiated into the working of the big business house of the Birlas. There are, however, reports of a mild recovery in recent weeks due mainly to institutional support from the Life Insurance Corporation, the Unit Trust, and the commercial banks. These developments may indicate either that the total volume of free savings has grown, possibly under the influence of price stability; or that time deposits and equity shares, despite the present and possibly temporary sluggishness of the capital market, now provide relatively more attractive returns, again possibly because of price stability;

or a combination of the two. At any rate, recent developments suggest that an increase in the real rate of return can attract more savings into regular investment and credit channels and also quite possibly raise their total volume.

Fourth Plan Private Sector Targets

The private sector here includes all non-government sectors: agriculture; corporate, non-corporate, cooperative, large and small industry; mining; commerce; banking; transportation and communication; other professions and the households. In the following discussion, the private sector is divided into two broad sub-sectors: the corporate sector; and the "non-corporate" or "households" or "individual" sector. The latter by definition includes all non-government and non-corporate activities and is in fact a residual sector.

The target of Rs. 10,000 crores over the Fourth Plan period for private sector investment is exclusive of transfers from public funds but includes a net inflow of foreign capital of Rs. 30 crores. Gross domestic savings of the order of Rs. 13,900 crores are expected to be generated during the Plan period, Rs. 1,860 crores in the corporate sector and Rs. 12,040 crores in the household and cooperative sectors. Central and State government draft on this, by way of taxation, government borrowings, small savings and forced savings will claim Rs. 3,930 crores of this, leaving Rs. 9,970 crores for investment within the private sector (see Table 1 and Appendix Table 2).

The non-corporate sector accounts for the bulk of private sector saving and investment. It is estimated by the Central Statistical Organization that total saving in this sector during the Third Plan period was about Rs. 6,579 crores (see Table 5), or an annual average of Rs. 1,316 crores. The Fourth Plan calls for an average annual saving of Rs. 2,400 crores -- an increase of over 80 percent over the estimated level during the Third Plan period. However, if we consider the IBRD estimates for 1966/67 and 1967/68 (see Table 5) which place the household sector's saving at Rs. 1,647 and Rs. 2,001 crores respectively in those years, it would appear that the saving capacity of this sector is moving up in the right direction and the Fourth Plan target might well be realized. But the fact still remains that a further sharp tightening of the belt in the individual sector will be necessary for this sector to achieve the Fourth Plan targets.

It was pointed out in an earlier section that the share of individual savings was rising, compared to corporate and government savings. Another interesting feature is the rising share of physical saving (saving directly invested in physical assets such as construction, acquisition of durable consumer goods, precious metals), a factor that has recently been of great importance in agriculture. The net result is greater availability of individual saving for investment in corporate and government sectors. There has been marked rise in the preference to hold on to savings in liquid or near-liquid form.

The target of Rs. 10,000 crores of private investment no doubt takes into account direct investment of the non-corporate private sector in construction, improvements to agricultural land, road building, etc. But it should be noted that apart from direct investment in agriculture and small business, a large part of the non-corporate private savings goes into high-class housing, "luxury" services and expansion of the overcrowded and inefficient retail trading.

Internal savings of the corporate sector are estimated at Rs. 1,860 crores for the Fourth Plan period, or an average annual saving of over Rs. 370 crores. During the Third Plan period the net savings of the corporate sector amounted to Rs. 717 crores (see Table 5), or an average annual net saving of Rs. 143 crores. The IBRD estimates net corporate savings at about Rs. 100 crores a year during 1966/67 - 1967/68 (see Table 5).

Comparing the Fourth Plan estimate for 1967/68 with these data, it would appear that the Plan savings estimate is not completely "net" but includes some depreciation provisions also. Leaving aside the definitional question, however, the Plan's projection of corporate savings as increasing at the same rate as national income is reasonable, and is likely to be belied only if the government takes extreme anti-business measures which completely upset the accepted patterns of Indian business behavior.

4. Policy Questions

Two recent political events have affected the framework for the problems of resource mobilization in India. One of these, the announcement of the recommendations of the Fifth Finance Commission, should serve to clarify the intentions and actions of the state governments with regard to state tax policy. The other, the nationalization of the major

commercial banks, leaves a number of the real economic issues unsolved, among them interest rate policy, the scope of rural banking, and the incentives to save of the private sector.

Taxation by the States

There has been a large difference between the Planning Commission's projections of the tax performance of the States and the States' behavior in 1969/70, the first year of the Fourth Plan. The Planning Commission assumed that the States would make a serious effort to increase their own resources in order to finance increased development outlays within their borders. The States, on the other hand, have preferred to run overdrafts with the Reserve Bank and to project large budget deficits in order to put pressure on the Finance Commission to raise its quinquennial "award" of transfers of resources from the Center to each of the states. On August 26, 1969 the Fifth Finance Commission announced its decision on the rules to be followed in calculating the total non-Center share in the various taxes and the formulae for calculating each State's share of the non-Center cake. The individual States should, until the next Finance Commission meets four or five years hence, no longer find it to their interest to bargain with the Center by inflating current outlays and failing to increase current receipts. The States may, therefore, now turn seriously to the business of increasing their own resources by introducing new taxes, particularly in agriculture, and by increasing the rates charged by State enterprises, particularly those in irrigation and electricity, within the limits set by the political influence of the rural vested interests of each of the States.

The Finance Commission's award will be made to stick as a ceiling only if the States' ability to run overdrafts with the Reserve Bank of India is curtailed. The Center is easing the States' initial deficit position remaining after the Finance Commission's award by an additional transfer to the States for Plan outlays beyond the amounts included in the Fourth Plan Draft of March 1969 (thus explicitly shifting part of the deficit from the States to the Center). It is the expressed intention of the Central Government to hold the States to the expenditure levels they can finance out of the Finance Commission award, the Center's grants for State Plan outlays, and their own financial resources. Our guess is that the Center's efforts will be only partially successful in holding the line, but that the States will, nevertheless, take some positive steps to increase tax receipts and State enterprise revenues.

The increase in government saving (or decrease in State government dissaving) resulting from increased government receipts will come at the expense of private incomes after tax and will, other conditions being equal, be reflected in reduced private saving. It should be part of government policy to change some of the other conditions.

Interest Rate Policy

One of the main methods for increasing total saving by mobilizing voluntary savings in India would be to increase time and savings deposits in commercial banks and other suitable financial institutions. Given an adequate structure of financial institutions, the main issue would be the rate of interest paid for the use of investible funds. To attract voluntary savings, the interest rate on time and savings deposits should be high enough to overcome the desire to consume and the rate of inflation.

The rates of interest on time and savings deposits are of particular significance because they are subject to direct control of the financial-monetary authorities of the government. The authorities must consider the relationship between the rates to be promised on time and savings deposits and (a) the lending rate of the financial institutions and (b) ultimately the expected rate of return on invested capital in desired investments. If the anticipated return on capital greatly exceeds the lending and deposit rates, then it would be possible to increase these rates without decreasing the incentive to invest. The authorities should stand ready to change rates as conditions dictate so that the flow of voluntary savings to financial institutions would be adequate to meet the volume of desired private investment. In theory, it is simply setting the equilibrium price wherever the changes in the demand for and supply of investible funds indicated.

Acceptance of the theory does not appear to pose insurmountable problems but implementation of policies would create powerful resistance within the Government and elsewhere. In India, as in other developing economies where the government directly invests and operates large industrial or other major productive enterprises, the rate of interest is held down purposely to reduce the cost of borrowing private savings and Central Bank credit. An increase in interest rates causes an increase in budget expenditures to pay interest on past debts as well as on new borrowings. Both of these steps are usually politically difficult. A second source of resistance would be from banks and other financial institutions

who hold large amounts of past issues of government securities which have low fixed interest obligations. An increase in interest rates would incur a capital loss on the one hand or loss of interest on the other. Higher deposit rates would result in reduced bank profits. A third source of resistance might be the private investors and entrepreneurs themselves, especially those who profit from bank credit at low or negative real interest rates. An increase in interest rates means that they would have to share a proportion of the real returns with the savers. On the other hand, higher rates might spur enterprises to use capital more efficiently, as has been the experience in other countries. A fourth source of resistance might be those who earn profits from alternative forms of savings such as in the gold trade, in land and real estate speculation, in the trade of certain hoardable commodities and in luxury goods and services.

A realistic interest rate or price of money savings can be said to be a "fair" price for the sacrifices incurred to save. As a result, it has economic and social implications as it forces government and investors to use borrowed funds in a more efficient manner. It would also have the virtue of shifting the focus of policy from the coercion of forced savings to creating opportunities for wide voluntary monetary participation.

Unfortunately, one of the first policy directives on banking practice issued by the RBI after bank nationalization was to fix interest rates at existing levels and to prohibit the offer of higher interest rates as a means of inter-bank competition for deposits.

Rural Banking

The rise in agricultural incomes in the last several years has resulted in an increase in savings of rural households, savings which have gone directly into investments in agricultural equipment, tube-wells, pumpsets, and working inventories of current inputs of seed and fertilizer. There has, therefore, been a direct link between agricultural investment and rural savings which will be broken as agricultural incomes continue to rise but the farmer's need for increasing his own stock of capital declines. The requirement to invest in his own farm has thus far provided the farmer with an active incentive to save. Unless an alternative means of placing his savings is available, there is some danger that further income increases will go into consumption rather than saving once the farmer's own equipment needs are satisfied. A rapid expansion of savings institutions is necessary if this opportunity to mobilize investible resources is not to be lost.

Before nationalization, the banking system was already being pushed by "social control" policies into establishing branches in rural areas, with the aim of increasing the flow of bank credit into agriculture and small scale industry. At the same time, the introduction of commercial bank branches into rural areas where banking facilities were previously non-existent or inadequate held some promise of encouraging deposits by rural income earners, thereby stepping up the rate of mobilization of savings and perhaps even their generation.

A significant question posed by bank nationalization is whether or not it will speed up the process of opening new branches in rural areas not yet served by commercial banks. If it does, as is the Government's announced intention, it may serve to increase total savings simply by making banking of small savings physically feasible. If the expanded banking system could also pay higher interest rates to depositors, it might have a significant impact on rural saving.

Saving of the Private Sector

The central ambiguity in the GOI's Fourth Plan is the role of the private sector. The Plan document itself is practically silent on the feasibility of financing the five year private sector investment target of Rs. 10,000 crores, although it is clear that the policy intention of the authors was to induce the private sector to make a larger contribution to development than in recent years. Since the publication of the Plan, there has been a change in public GOI attitudes toward the private sector, as exemplified first by former Finance Minister Morarji Desai's decision to ban forward trading on the stock exchanges, then by Prime Minister Gandhi's nationalization of the banks and the Dutt Committee's submission of an anti-big business Report on Industrial Licensing Policy, and finally by the Prime Minister's current attempts to reformulate a "socialist" economic policy for the Congress Party. To the extent that these new factors engender an economic climate unfavorable to private sector investment, they will also probably tend to reduce the private sector's incentives to save. The saving propensities of the vast majority of households are not likely to be affected by the "economic climate", but their incomes and therefore their total savings may be. For some key entrepreneurial groups, however, both investment and saving could be seriously discouraged.

The present uncertainty as to the lines of the GOI's new economic policy therefore reinforces our initial feeling that the Fourth Plan's projections of private sector savings are overly optimistic. Unless some positive results emerge from bank nationalization in the fields of rural banking and interest rate policy, private saving is likely to fall seriously short of the Fourth Plan targets.

APPENDIX TABLES

Planning Commission's Projections
of Saving by Sector.

Appendix Table 1
Fourth Plan: Public Sector Saving
(Rs. crores)

	<u>Amount</u>
1. Domestic budgetary resources	4,909
2. Surplus of public sector enterprises	<u>1,895</u>
3. Subtotal	6,804
4. Transfers from revenue account to sinking funds on capital account	850
5. Loan repayments by public enterprises before contribution to Plan	300
6. <u>less</u> Current Plan outlay	<u>-2,146</u>
7. Total public sector saving	5,808

Sources: Lines 1, 2: Fourth Five Year Plan 1969-74 Draft,
pp. 82-83 (as re-arranged in Table 3 above).

Lines 4, 5: Planning Commission

Line 6: Fourth Five Year Plan 1969-74 Draft, p. 48.

Appendix Table 2
Fourth Plan: Private Sector Saving
(Rs. crores)

	<u>Amount</u>
1. Corporate savings	1,860
2. Household and cooperative savings	<u>12,040</u>
3. Total private sector savings	13,900
4. <u>less</u> Central and State governments draft on private saving (net)	-3,930 <u>a/</u>
5. Private savings available for private investment	9,970

Source: Fourth Five Year Plan 1969-74 Draft, p. 90, and
Planning Commission.

a/ Derived as follows:

Draft on private savings (gross) (Table 3, line 3)	4,230
Deficit financing	850
<u>less</u> Miscellaneous capital payments to public sector	<u>-1,150</u>
	3,930

Appendix Table 3
Fourth Plan: External Assistance
(Rs. crores)

	<u>Private sector</u>	<u>Public sector</u>	<u>Total</u>
1. Total gross aid	<u>300</u>	<u>3,730</u>	<u>4,030</u>
a. PL 480	-	380	380
b. Other	300	3,350	3,650
2. <u>less</u> Debt service	<u>-374</u>	<u>-1,906</u>	<u>-2,280</u>
a. Principal repayments	-271	-1,216	-1,487
b. Interest	-103	-690	-793
3. Net aid (net of interest and principal repayments) (1-2)	<u>-74</u>	<u>1,824</u>	<u>1,750</u>

4. Net aid (net of principal repayments only) (1-2a)	30 <u>a/</u>	2,514	2,544

Source: Planning Commission

a/ Rounded.