McNamara Papers

Travel

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Economic Situation

Statistical Indicators

Area: 1,262,000 sq. miles

Population, 1968: 520 million

Rate of growth, 1962 - 1968: 2.5% p.a.

1951 - 1961: 2.0% p.a.

Gross national product at market prices, 1967/68 (preliminary): Rs 325 billion

Rate of growth at 1960/61 prices, 1960/61 - 1967/68: 3.8%

Gross National product, per capita, 1967/68: Rs 600 ($80)

Rate of GNP per capita growth at 1960/61 prices, 1960/61 - 1967/68: 1.1%

Net Domestic Product by Industry of Origin (at 1960/61 prices):

	1960/61		1966/67	
	(Rs billion)	(Percent)	(Rs billion)	(%)
Agriculture	69.6	51.5	67.0	42.1
Mining and Construction	7.7	5.7	9.8	6.2
Manufacturing	18.5	13.7	26.1	16.4
Utilities, transport and communication	6.5	4.8	9.8	6.2
Public Administration and defense	5.5	4.1	10.8	6.8
Commerce and other services	27.4	20.2	35.5	22.3
	135.2	100.0	159.0	100.0

Percent of GDP at market prices:

	1966/67
Gross investment	15
Gross savings	12
Balance of payments current account deficit	3
Investment income payments	1
Government (consolidated Centre/States) current revenues	16

Resource gap as % of investment: 1966/67 20

Money and credit

Conversion: 1 rupee = $ 0.13
1 $ = 7.50 rupees

Terminology: 1 lakh = 100,000
1 crore = 10,000,000

Rate of increase in wholesale prices	1967/68	1960/1 - 1967/8 Annual Average
	11.1	7.8

Public sector operations (Rs billion):	1967/68 (Est.)	1960/1 - 1967/8 Annual Average
Public sector plan outlay	22.05	18.57
Balance from current revenues plus surpluses of public enterprises	3.64	5.37
Total external assistance to public sector	9.91	6.05

External public debt, excluding suppliers' credits (US $ million):	1967/68	1960/1 - 1965/6 Annual Average
Total debt outstanding	5,400	5,062
Total annual debt service	444	245

Balance of Payments (US $ million):	1967/68	1960/1 - 1966/7 Average rate of increase (%)
Total Exports	1,594	2.8
Total Imports	2,626	4.1
Invisibles	107	
Current account deficit	925	5.8

		1960/1 - 1964/5 Annual Average
Debt service ratio	24%	13%
Gross foreign exchange reserves	$ 753 mil.	$ 610 mil. (or 3.1 months' imports)

Emphasize to M. Desai
1. New position on "important problems"
2. Bank will finance public fertilizer plants if properly supported by technical assistance + if reasonable opportunity given for some private ~~[illegible]~~ plants –

5il

Important Problems

1. Irrigation + water control as a limiting factor on agri economy
must integrate irrig. plng & agri production plan –
engineering approach to irrig. spread all over the country w/o
adequate financing + w/o estab. priorities related to
agri plan –
Irrig. min. approaches problem from a pol. pt of view
w/o rel. to agri plan & agri priority –
Engineering is probably planning too little water: more water
need for new technology + multiple (as opposed to single) cropping –
[over] January message will work on water problem – emphasizing to Patel the importance – [attach this]

2. Credit problem
should place more emphasis on credit for agri prod –
rural coops spotty in effectiveness
Center has correctly introduced multiplicity of agencies but
state performance spotty –

3. Pricing
Marketing
Food Zones affect & translate into price changes which
impede production of rice – in several states price is
far below inter. price or other dom. prices –

4. Support
Rupee very much overvalued (on import side tried to correct
by across the bd tariff)
Are beginning to recognize by inter. subsidy but are
correcting by variable as opposed to constant subsidy –
results: distorts allocation of investment + fails to take
advantage of comparative advantage – there has been an
improvement but not enough –
Indian policy has fluctuated between "nothing can be done"
+ ∴ do nothing or optimism that nothing needs to be done –
support optimistic view but must needs to be done to realize
the opportunity –

NOTES ON THE INDIAN ECONOMIC SITUATION

Introduction

The Present State of the Economy

The immediate economic picture is one of: (a) Moderate industrial recovery after two years' recession, but confined largely to consumer goods, farm inputs, and other light manufactures without much supporting thrust from heavy industry; (b) Generally stagnant investment, partly for want of public investment funds and partly because of demand deficiencies and excess capacity in both public and private industry; (c) A plateau in agriculture, after last year's record crops, because of monsoon disappointments which in many areas have offset further gains from improved varieties and husbandry; and (d) Fairly stable prices for the first time in several years and some rise in foreign reserves, the latter reflecting higher exports but also low imports and a run-down of the foreign aid pipeline. Internal and external finances are only manageable in prevailing financial circumstances because of the slack economy, and would be thrown quickly out of kilter with any marked upswing in economic development. All this means only modest gains in this year's national output, probably at about the long term real growth rate of 3.5 percent a year. This is hardly more than the steady 2.5 percent annual increase in population which seems to be one of the very few reliable variables in the Indian economic calculus. More is said about the population problem later, but even on an optimistic view of progress in the family planning effort it will take at least a decade before there is any marked effect on population growth.

Some Underlying Difficulties

The difficulties of the current economic situation stem not only from monsoon vagaries in agriculture and cyclical swings in industry. In agriculture, the spread of the new higher yielding technologies has run into a number of problems still to be solved, as might be expected and about which more is said below. Gains in wheat production continue to live up to the high promise of the new technology, but the programs for rice and other cereals have encountered varietal, and water control problems and other snags to rapid dissemination.

In industry, the "forced draft" industrialization, which was the keystone of development strategy in the 1955-1965 decade, has created maladjustments in the industrial structure which for the time being are a drag on the growth of industrial output. Idle capacities of a more than cyclical size exist throughout much of the heavy industrial sectors. They reflect long-lead investments which were decided in accordance with overly optimistic assessments of future industrial demand and which in practice have proved excessive in relation to rates of economic growth that could be sustained. They have probably also been excessive in relation to India's technological and managerial capabilities for efficient operation and smooth inter-industrial adjustment. All this of course has added to industrial costs, as has the subordination of cost considerations to import substitution and other objectives in the industrialization drive.

Time and a revival of industrial growth can of course help correct these maladjustments. But there is a vicious circle in all this in that the maladjustments themselves prevent a substantial internal generation of new

financial resources for further industrial investment - an essential element of a self-sustaining industrialization process. The financial record of a large part of the new industry created during the Fifties and early Sixties, most of which was in the public sector, has been poor. In the consequent absence of sufficient internal resource generations, rapid industrialization could only be sustained on government resources. It was so supported for a few years in the early Sixties. But with the increased defence requirements after the China fighting of 1962, and with the inflation of subsequent years, expansionary fiscal support for industrialization had to be curtailed and the industrialization process ran out of steam.

This is the situation which still inhibits revival of rapid industrial growth. Prospects for finding the necessary resources, either from internal generation or public support, are poor. Hence, the absence of favourable expectations needed to revive capital expansion, and thereby to revive the capital goods industries and, in turn, accelerated industrial growth.

A Longer Perspective

All this may seem a rather gloomy view of the current economic scene, especially by year to year measures of the performance of the Indian economy. However, economic progress seldom follows an uninterrupted course - not in an economy so large, complex and troubled as that of India. If one looks upon current economic difficulties, as aspects of adjustment in a longer term development process, there are elements in the current situation which support a hopeful economic outlook for the future.

The snags which have appeared in the new agricultural technology have certainly not cast doubt on the promise of the so-called "green revolution". They have only brought into focus problems which call for more intensive research, well-guided irrigation programs, improvements in rural institutional arrangements and other appropriate agricultural development efforts. Food self-sufficiency seems now hardly likely by 1970-71 as earlier predicted, but it is still a reasonable expectation by 1975 or before. This is not to say, of course, that the more intractable problems of the vast numbers of subsistence cultivators and farm labourers are on their way to any clear solution except perhaps in a very long term context.

There is also considerable satisfaction in the fact that export activity in manufacturing, which is so necessary to a long run solution of the Indian balance of payments problem, is at last coming to life. Exports are at peak levels this year in spite of unfavourable developments in jute and tea, the traditional export standbys. And contacts with manufacturers suggest a strong push in the industrial export field, in response to government pressures and incentives.

Some Promising Lines of Improvement

This export ferment indicates one promising direction for a revival of industrial expansion. There are other industrial lines which are doing well - nearly all lines of consumer goods including durables, farm equipment, and

other agro-industrial supplies. The activity in these fields is not yet stimulating a responsive revival in the capital goods industries. But it should over the course of two or three years, and perhaps sooner if supported by a rise in public investment activity. The latter is needed, not just for "pump priming", but to fill necessary gaps in the infra-structure, especially in power distribution, irrigation, roads and ports, housing and urban improvements and further expansion of fertilizer capacity. This development strategy, emphasizing less capital intensive and more quickly maturing industrial investments and a step-up in public infra-structure investments, should in the course of the next two years or so take up some of the slack in capital goods industries and at the same time start to accelerate the process of resource generation for further public and private investment.

These suggest promising lines of priority for further development in combination with increased effort to identify and remove the constraints on the spread of the new agricultural technology and of contraception, as well as programs to make up for some, at least, of past neglect in education, housing and urban facilities. Development along these lines should improve the rate and quality of development, but they will not usher in any millenium. It is probably unrealistic to expect significant improvement in the conditions of the majority of the rural masses, in employment, in literacy, in urban squalor, and in the rate of population growth except in the very long run. The development of India seems likely to be one of the world's problems for a long time.

The New Fourth Plan and Resource Shortages

The patterns of development indicated above appear to be broadly in line with current government thinking, although details are still in process of preparation in the course of drafting a Fourth Five Year Plan for the period starting next April. This, is the second attempt at a new plan, after the first Fourth Plan draft of two years ago was scrapped for want of resources. Priorities in the Plan are likely to emphasize agriculture, infra-structure, and light industry rather than the heavy long-lead industrial investment emphasis of the last two plans. The Russian aided Bokaro Steel Plant, already under construction, and further fertilizer investment will probably be the largest single industrial elements of the new plan. The major issues of the new plan are more likely to be financial, because of the severe resource constraints on economic development.

The resource situation is no better now than it was two years ago. Public plan expenditure has remained constant for three years and, with price increases, has declined in real terms. The private investment picture is the same. Fiscal measures for greater resource mobilization are not promising in a fairly stagnant economic situation. Agricultural incomes have increased but they seem fairly resistant to heavier taxation for administrative and political reasons. There is the view that the sluggish economy with its excess capacities offers scope for larger deficits without much inflation. But this overlooks supply bottlenecks, especially on key consumer goods like rice, which would vitiate price stability with more deficit financing. Furthermore, there is the foreign exchange situation which is now only manageable because of the slow moving economy. A foreign exchange crisis would almost certainly accompany a marked upswing.

There is no obvious escape route from this financial box although the dimensions of the box are the subject of major debate in the Government - mainly between the Planning Commission and the Finance Ministry each of which has its own interpretation of the Government's Fourth Plan slogan, "Development with Stability".

Excluding a gamble with price stability, there is not much financial room for an increase in levels of public and private investment and other plan expenditures, as financial matters stand at present. Net annual public and private investment is now about Rs.30,000 million or about 12 percent of national income, and the current annual public plan expenditure (which overlaps the public investment figure) is about Rs.22,000 million.

The Planning Commission has tentatively assessed additional requirements at a minimum rate of annual increase of Rs.2,000 million. At this rate, the cumulative addition to development outlays over a five year period would come to Rs.30,000 million or an annual average of Rs.6,000 million. While not surprisingly ambitious, from a resource standpoint this is probably "pie in the sky" as an investment aim for the public sector alone, given likely financial constraints.

Something in this order should, however, be a reasonable objective for additional public and private investment combined. And from the income growth that could be expected to accompany this increase in investment, it should be possible to mobilize domestically the greater part of the required additional resources. But the problem is to get the process going in the first year or two of the next five year period. It is here that foreign aid could make a major contribution if it were to be stepped up to a higher level which could be sustained for a while. It is because of this need for an initial boost which a higher level of foreign aid could provide, that the present downtrend in new aid commitments is especially disappointing.

This year gross aid disbursements, including a draw down on past commitments in the aid pipeline and aid-financed food imports, will probably be about $1200 million. The net figure after service on external obligations including those to the Bank and the IMF will be about $600 million. Next year's prospects are just about the same, but only with the moderately optimistic assumptions that the U.S. will still manage about $200 million of aid, that there will be another debt rescheduling of $100 million, that the other aid-giving countries will continue their assistance at recent levels, and that IDA credits will be resumed with disbursements for the year near $200 million. In addition, all this presupposes a continuation of the present sluggish pace of the economy with, consequently, no more than a moderate increase in imports. In other words the present foreign accounts situation is only manageable with a virtual moratorium on increased development. It also follows from the assumptions about new aid commitments next year, that there will be a further draw down on the aid pipeline, this time to about rock bottom leaving foreign assistance for subsequent years to depend entirely on new commitments.

Previous Bank assessments have put India's annual foreign aid requirements necessary to support a reasonable development program at a gross figure of $1500 or $1600 million including food aid. This would leave about

$1000 million a year, net of debt service, or about $400 million more than current net aid disbursements including pipeline reductions and food aid.

In rupees this increase would represent Rs.3,000 million or, in a five year period, about half of the tentative assessment of additional resource needs previously indicated. It would, however, be of far more importance than this in providing resources for a necessary boost in the first year or two of an accelerated development, and thus starting the process of economic revival from which the domestic resources needed for still larger increases in development spending in the future could be generated. However, since present aid circumstances encourage little optimism along these lines, the more likely prospect for the near future is a continuation of the present slow pace of economic activity.

Population

Population

The background

India's population grew at an annual rate of less than half of 1 per cent in the first decade of this century, and fell slightly in the second decade (under the combined impact of influenza and the demographic repercussions of an earlier famine). During the next three decades, the growth rate was about 1 per cent; it rose to 2 per cent in the 1950s. It is estimated that sometime in 1966, India's population crossed the 500 million mark. Demographic data are uncertain, but the most generally used figures are those of a current birth rate of about 41 per thousand, death rate of 17 per thousand, and growth rate of 2.4 per cent. This fast growth is undoubtedly a burden in terms of the high proportion of children under working age, of education expenditure, and of investment in social facilities; perhaps its most burdensome impact is through the mounting number of people for whose employment capital cannot be found. This problem is heightened by the exhaustion of arable fallow land. The cropped area could still expand in the fifties, but there was practically no such growth since then.

From the beginning of planned development, the drawbacks of rapid population growth were to some extent recognised. However, major efforts to influence the trend started quite late. Allocation for family planning was negligible under the First Plan, Rs 50 million under the Second Plan and Rs 250 million under the Third Plan. Actual expenditure in fact generally fell well below these estimates.

Present population control activities

In contrast, Rs 390 million were provided for family planning by the annual plan for the year 1968/69, and, to judge by progress to date, most of this sum is likely to be actually spent. A total of more than 7000 family planning centres have been opened. While shortage of personnel, especially in the rural subcentres, is still a bottleneck, it is palliated by the use of semi-professional motivators, paid a few rupees per "customer", by reliance on mobile clinical units, and by "family planning fortnights", during which sterilizations and insertions of intrauterine contraceptive devices (IUCD) are carried out on a massive scale in large camps.

These efforts meet with a considerable measure of success, though the IUCD program seems to be faltering. After a rapid rise to a peak of 140,000 insertions in December 1966, current IUCD insertions do not much more than compensate for removals and rejections. The IUCD is still a very imperfect device, and some of its defects are particularly serious in India. Thus, mild bleeding often follows insertion for several months; loss of blood, even minute, is considered a very serious health hazard in India, and furthermore, in most communities, menstrual-type flow entails ritual impurity to the point of forbidding even the preparation of the family's food. Much of the setback in the IUCD program can be attributed to these defects of the "loop".

However, at present, greater emphasis is placed on voluntary sterilization and this program seems to be making fast progress, with perhaps as much as two million sterilizations to be achieved in the current year. Of course, setbacks may well occur later, especially as an unknown, but perhaps important proportion of those now sterilized may already have been motivated, and many of them may already have been practising traditional forms of contraception.

Without decreasing the emphasis on sterilization, and while still carrying on with the IUCD campaign despite its defects, the Government has also launched an ambitious and imaginative condom distribution campaign, combining free distribution through family planning centers with subsidised distribution at Rs 0.60 (8 US cents) a dozen through the private retail network of mass consumption goods (notably matches and tea). A sizeable step-up in the use of this means of contraception is expected in the current year.

Perspective for the next decade

Despite the notable progress achieved in most fields, and the dynamic and imaginative leadership of the program at the Central Government level, there are undoubtedly many shadows in the picture. Our, and the Government's knowledge of the overall demographic situation is really quite incomplete. Many facets of the family planning program are themselves not well known. The demographic impact of the program is shrouded by the combination of these uncertainties. Hopefully, this lack of information will be to some extent remedied next year, when the U.N. is to send a mission to help evaluate the Indian population control program.

Beyond these uncertainties, it is clear that the effort made until now is still small relative to the magnitude of the problem. The Government aims at reducing the birth rate to 22 per thousand by 1978/79; in order to achieve this, its perspective plan fixes targets of about 10 million IUCD insertions and well over 10 million sterilizations in the 1966/67 - 1970/71 period, going up to 5.6 million sterilizations and 5.6 million IUCD insertions performed in the year 1978/79, while 11 million couples should by then be practising other modern means of contraception. It is quite doubtful whether these intermediate targets for contracepting couples would suffice to bring about the planned lowering of the birth rate, given the likely demographic distribution of contracepting couples, the likelihood that some of the new acceptors have been practising traditional methods in the past, and the tendency of the natural fertility rate of the Indian population to rise. But even to approach these targets would require serious further efforts, and the setbacks suffered by the IUCD program requires the rethinking of the whole set of targets.

It is tautological that the success of population control depends on the acceptance by a large segment of the fertile population both of family planning techniques and of the aim of a small family. All in all, the acceptance of some modern techniques seems to have spread remarkably well in the past few years (though possibly in part to the detriment of traditional methods). There is however, no evidence as yet that a small family is widely desired; more precisely most couples seem to want two adult sons, and this

desire is so strong that the family structure it entails is accepted. In addition to being an absolute religious necessity, for most people sons are the only means of support in old age.

There is certainly no ground for pessimism. A huge, and on the whole, well managed effort is being mounted to reduce the birth rate. But neither should one hope for a dramatic fall of the birth rate in the short run. In a country where less than half of the 500,000 villages are connected to a road, and which is divided into thousands of fully endogamous communities, obstacles to communications are tremendous. But, more importantly, overcoming of the desire for relatively large families is probably contingent upon the progress of the development process.

The effort is worthwhile and it may even be desirable to increase it, but one should recognize that at least in the coming decade, it is not likely to result in a dramatic slow-down of population growth but, at best, in a very mild one. In fact, even such a mild slow-down would be a great achievement, worth a considerable effort and deserving international assistance, for given the tendency of natural fertility still to rise, and that of the death rate to fall, without a purposive and successful effort, population growth would accelerate. But while the continued success of the effort is crucial to development - indeed, to mere survival - in the long run, it is not going to affect substantially the conditions and circumstances of the development effort within the next decade.

Possible lines for foreign assistance

Considerable help is already being given to India in the family planning field by the United States (condoms; various equipment; funds and personnel for technical assistance), Sweden (free foreign exchange for condom imports; possibility of financing expansion of condom factory) and the Ford Foundation (technical assistance). The availability of funds, either in rupees or in foreign exchange, does not at present seem to be a major obstacle in most areas of the program, though additional funds may be needed in the future to finance the import or production of contraceptives and to buy vehicles, communication equipment and other facilities for the dissemination of family planning practices. The shortage of field personnel is still a serious bottleneck, but the numbers involved and the type of work are such that it seems unlikely that a significant foreign contribution of personnel could either be provided or would be acceptable - though for training, additional technical assistance may be desired.

One crucial area where additional foreign assistance could be effective is that of the development of a more acceptable variant of the IUCD. Sterilization is an effective and apparently acceptable means of eliminating further births after the desired number of children has been reached. But an acceptable means of deferring births is also required. Increasing the time between births would, of course, reduce the overall birth rate even if it did not affect the eventual number of children born to each couple over their full reproductive period. In Indian conditions, with their lack of privacy, the spread of modern contraception techniques for the purpose of spacing births would probably require a simple non-clinical and easily reversible operation which would fully protect from conception until it is reversed. Were it not for the defects noted above, the IUCD would fill this need; hence, the

enthusiasm the "loop" generated when it was first presented in India four years ago. A project aiming at developing such a method - quite possibly by producing an improved IUCD - would seem to be eminently suitable for international assistance.

Summary

The growth rate of India's population increased relatively recently, and it still naturally tends to grow. In the past few years, the Government embarked on a large-scale program aiming at reducing the birth rate. The official target for 1978/79 is to lower the birth rate from the present estimate of 41 per thousand to 22 per thousand, and thus achieve, despite the expected fall of the death rate, a reduction of the population growth rate to 1.3 per cent. The program is sincere, large-scale and on the whole well directed; but it is extremely unlikely that it will, or indeed that it is possible, to achieve the planned demographic revolution within the decade. A much more modest lowering of the growth rate of population would still be a great success, deserving international assistance. Though a demographic revolution remains essential in the long run, the demographic background of the development effort is most unlikely to improve drastically within the next decade.

International assistance is already forthcoming, notably for the purchase of contraceptives, for logistic and communications equipment, and for technical assistance and training. In future, it may become useful to provide additional assistance in some of these areas. However, the area where foreign assistance now appears most desirable, is in helping to develop a simple, easily reversible non-clinical method, lacking unpleasant side effects which would protect from conception until reversed, and could therefore be used for spacing births.

India: Selected demographic projections

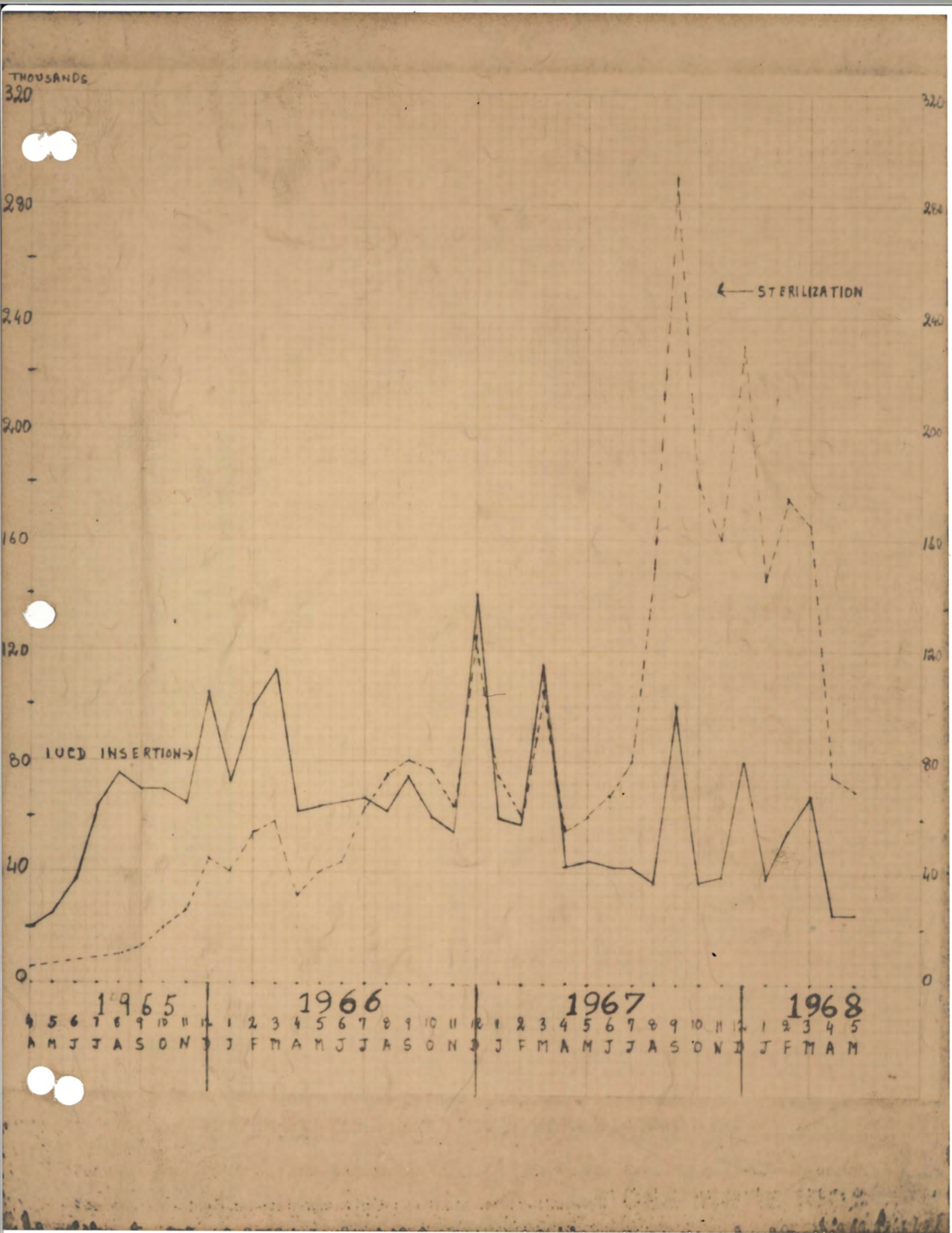
Population (millions) mid-year projections	High	Low
1966	494	494
1971	563	554
1976	643	615
1981	729	666
Birth rates (per 1000) Period averages		
1961-65	41.0	41.0
1966-70	40.5	36.8
1971-75	38.3	31.8
1978-80	32.8	25.0
Death rates (per 1000) period averages		
1961-65	17.2	17.2
1966-70	14.2	13.7
1971-75	11.7	11.0
1976-80	9.4	9.0
Growth rates (per cent) period averages		
1961-65	2.4	2.4
1966-70	2.6	2.3
1971-75	2.7	2.1
1976-80	2.3	1.6

Source: Government of India, Planning Commission, Report of the Expert Committee on Population, 1964.

India's Population since 1901

	Population (in millions)	Average annual growth rate during previous decade
1901	238	-
1911	252	0.5 per cent
1921	251	-
1931	279	1.1 per cent
1941	319	1.3 per cent
1951	361	1.2 per cent
1961	439	2.0 per cent
1968 (estimate)	525	2.4 per cent (estimate)

Decennial census figures, covering the present territory of India.


THOUSANDS
320
280
240
200
160
120
80
40
0
← STERILIZATION
IUCD INSERTION →
1965
1966
1967
1968
4 5 6 7 8 9 10 11 12 1 2 3 4 5 6 7 8 9 10 11 12 1 2 3 4 5 6 7 8 9 10 11 12 1 2 3 4 5
A M J J A S O N D J F M A M J J A S O N D J F M A M J J A S O N D J F M A M

Agriculture

Agriculture in India

During the fifties and early sixties, agricultural programs were mainly aimed at spreading adoption of agricultural practices already employed by the country's better farmers. By contrast, the new agricultural strategy launched in 1965/66 emphasizes technological change. The major element of the strategy is the High Yielding Varieties Program which consists essentially in the large-scale introduction of new and much more productive cereal grain varieties in areas of assured water supply together with the complementary requirements of fertilizers, pesticides and other inputs required to make the most out of the seed potential. While data to assess new strategy performance are scanty and unreliable, developments since 1965 have established that the Indian farmer will eagerly take to new techniques which, from his standpoint, make economic sense. The rapid growth of fertilizer use (about 25-30 per cent a year since 1965), the high premiums offered for the new seeds as well as such imponderable developments as the enhanced status of the research scientist in rural areas are straws in the wind of an irreversible process of rural change. But, not surprisingly, this very process is bringing to light technical and institutional deficiencies which must be tackled lest agricultural growth reach a premature ceiling.

The most successful component of the new strategy so far has been the spread of dwarf wheat cultivation in Uttar Pradesh, Punjab, Haryana and Bihar. It is reported to have covered 5-6 million acres during the last winter season (1968) and may well spread over 8-9 million acres during the next season (1969). This would be above the target area originally set for 1970-71, under the High Yielding Varieties Program (8 million acres) and not far below the total irrigated wheat acreage. The success of the wheat program so far can be attributed to several factors: (a) the imported Mexican wheat varieties are well adapted to Indian conditions, being more resistant to rust than indigenous varieties; (b) newly developed varieties e.g. (Sharbati Sonora, Sonalika) combining the grain colour and cooking characteristics prized by the Indian consumers with the high yields of the red Mexican wheats are rapidly spreading and may completely replace the red wheats by 1970; (c) some of the new wheats can be sown late, thus opening up profitable opportunities for double cropping, particularly where there is irrigation and mechanization; (d) water control during the winter season has improved in northern wheat-growing areas following substantial investment in wells and tube-wells, often within the command of major canal systems. By 1970, the tempo of irrigation expansion in the North rather than problems of farmers acceptance will likely be the limiting factor in the spread of the new wheat technology.

In contrast to wheat, the HYVP paddy program based on new imported "dwarf" varieties of rice such as TN1, IR8 and IR5 has only had limited and localized success. In 1967/68, it may have covered about 4-5 million acres which is only 15-18 per cent of the irrigated paddy acreage. It is doubtful whether the HYVP target acreage of 12.5 million acres will be reached

by 1970/71, for the following reasons: (a) TN1, and to some extent, IR8 are susceptible to bacterial blight, especially during kharif, when most of the paddy is grown; (b) TN1, IR8 and IR5 have longer duration than most of the improved indigenous varieties (notably ADT 27); (c) dwarf varieties require more accurate water control and drainage systems than available on most farms of the Center and South; (d) high yielding rice varieties with the consumer preferred milling and cooking characteristics of indigenous varieties have not yet been developed to the point of release.

New varieties of other cereals (all hybrids) have also had a limited impact so far. High yielding varieties of maize, sorghum and millets may have covered 3-4 million acres in 1967/68, only 4-5 per cent of the aggregate area under these crops. Again, there are technological problems. While the varieties have short durations, a high fertilizer response and drought resistant characteristics, insect attack and disease has hampered their spread. In addition, the quality of commercial seed produced has been poor.[1/] However, with the release of synthetic maize varieties (which do not require replacement every year) the program may be expected to gain momentum. Furthermore, the implementation of the new seed legislation and the set-up of modern seed production and processing facilities (such as in Tarai) should help solve the seed quality problem.

Taken as a whole, the performance of the High Yielding Varities Program has been mixed. With wheat offsetting much of the shortfalls in the rice and hybrid programs, total estimated area coverage of HYVP has by and large reached planned targets (nearly 15 million acres in 1967/68 and possibly 21 million acres in 1968/69). On the other hand, yields have not yet come up to expectations. Precise yield data are lacking but actual yield increases may, on an average, only be half of the original yardstick of 0.8 additional tons of foodgrains per acre. Yet, from the standpoint of long-term growth, the spread of revolutionary foodgrains varieties over an area twice as large as Belgium is, without doubt, a remarkable achievement for a three-year period.

One cause behind the disappointing overall yield of HYVP has been the low average rate of fertilizer application so far - about 50 lbs of nutrients per acre (35-50 per cent of recommended application). Whereas fertilizer supply bottlenecks were largely responsible for limited fertilizer use in the past (up to the summer season of 1967 when fertilizer arrived late due to the Suez crisis), fertilizer stocks have built up since last winter. This reflects the Government's new policy to give priority to fertilizers in its import program as well as recent gains in domestic fertilizer production.

With the exception of sorghum and millets, assured water is required for the success of the new agricultural strategy. Unfortunately, past irrigation policy has failed to provide adequate water control on the farm. Minor tanks, shallow wells and small diversion works generally hold insufficient water reserves for long dry periods, when water is most needed.

1/ Similar seed production and distribution problems exist for paddy and wheat also. However, they have been less serious since farmers can save wheat and paddy seeds from their own crops for a few years without substantial loss in yields.

Extensive canal structures have often been designed for drought protection rather than for intensive cultivation. Lack of prior agricultural planning, neglect of drainage works and terminal channels, poor maintenance, fragmented holdings, antiquated systems of water distribution and inefficient water use on the farm have, in so many cases, kept down the returns from irrigation investment.

Increased private utilization of groundwater resources in canal commanded areas has partly offset the failure of major irrigation programs, notably in the Indo-Gangetic plains where good quality groundwater is plentiful. Net additional irrigation from groundwater resources has been about 1.2 million acres a year during the past three years, as compared to 650,000 acres a year in the early sixties and 250,000 acres a year in the fifties. A further step up of minor irrigation development is feasible. This requires improved credit services to farmers and contractors, detailed groundwater investigations, and an expanded power transmission and connection program.

Another major task in the water field is to make better use of existing irrigation assets and to complete major and medium irrigation schemes started over the past 15 years but which have not been completed for lack of resources. When complete, these projects might add 20 to 25 million acres to India's present 80 million acres of irrigated land. Their completion will require very large sums, however. Given the resource shortage, careful project selection and basin-wide planning should be undertaken. In most cases, investment costs could and should be recovered from project beneficiaries.

Since 1965, economic circumstances have generally been propitious for farmers in water secure areas, precisely those which the new agricultural strategy is trying to reach. In some surplus rice areas like Andhra Pradesh, Madras, farmers have had to bear much of the economic burden of movement restrictions and compulsory procurement below market prices. An encouraging price support program for wheat was initiated last winter in the North. Its expansion and the operation of buffer grain stocks require additional storage facilities and a considerably strengthened Food Corporation.

Conclusion

For decades, Indian farmers have been starved of fertilizers, pesticides and other supplies necessary to raise yields. The current strides of the new agricultural strategy are largely based on the satisfaction of a pent-up demand for these inputs. The introduction of new fertilizer responsive cereal grain varieties and better prices have also put steam behind the strategy. But in order to keep the momentum of the "green revolution" going, agricultural policy must strengthen its support of applied research and tackle basic infrastructure and institutional problems, namely the country's inadequate irrigation systems, inefficient extension service and cooperatives, oppressive and insecure tenancy arrangements and a restrictive marketing framework.

Fertilizer

Fertiliser situation

Requirements and Consumption

This is the first year in which consumption is not being limited by the availability of fertiliser. Last year overall supplies were large but imports were bunched late in the year and fertilisers were not available in all areas when they were needed. This is also the first year in which the accumulation of stocks larger than planned has been a concern to some States and producers. Stocks of phosphate and potash fertilisers were particularly high. Stocks of sulphur required for the domestic production of phosphate fertiliser were also high. Because of this imports of fertilisers and fertiliser materials for next year are being reduced to about $250 million. This is less than in 1967/68 and considerably less than earlier forecasts. This reduction in imports is expected to be temporary. Requirements should rise considerably in 1970/71 when the stock position becomes normal.

The present easy position of supply combined with the government's policy of shifting the responsibility of marketing on to the producers has resulted in increased pressure to develop more effective marketing arrangements. Earlier, the domestic production of nitrogen fertiliser was purchased by the government for distribution to the States through the fertiliser pool. In recent years producers have been required to market increasing amounts of their production themselves. As of October 1, 1968 the government has retained the option to purchase only 30% of domestic output but may not exercise this option. The aim is to limit the government's pool operations to the procurement and distribution to States of imported fertiliser. Efforts are now underway by the public sector plants themselves to develop marketing organisations and storage facilities.

Consumption of nitrogen fertiliser in 1967/68 has been estimated by the government at about one million tons. This may be compared with 600,000 and 740,000 tons for 1965/66 and 1966/67. Consumption in 1968/69 may be 20 to 30% more but no serious estimates are yet available. Fertiliser use during the summer crop was not up to expectations in some regions and the prospects for demand during the winter crop are not yet clear. In general, consumption may be expected to continue to grow rapidly though it is unlikely to reach target levels.

Production

Production of nitrogen fertiliser may reach 550,000 tons this year, (our earlier estimate was 580,000 that of the GOI 650,000 tons). There have been continued difficulties in a number of plants as a result of power interruptions (Coromandel, FACT, Gujarat) floods, (Gujarat), equipment problems (FACT, Neyveli, Trombay) and raw material problems (Sindri). In recent months production has been encouraging but not enough to overcome earlier deficits. Construction of the Cochin and Durgapur plants is running several months behind schedule and the Madras project is expected to be completed about six months later than the original schedule. These delays are mainly attributable to procurement problems. In the case of Durgapur and Cochin, delivery of indigenous

equipment has been delayed. In the case of Madras, a shift from foreign to domestic procurement in the case of a boiler, plus delay in deciding between domestic or foreign sources for a number of other items, has caused the revision of the completion date.

New Projects

Letters of Intent have recently been issued to Occidental Petroleum and Kalinga Fertilisers, an Indian concern. Occidental's project is to be at Visag. Occidental will have majority ownership - there is not expected to be any single large Indian partner. Kalinga will collaborate with several West German firms in the fertiliser field. The site is not yet selected but it is likely to be in the Punjab. Neither project is very close to actual implementation at this time.

There has been no significant change in the position of the other pending projects. The engineering study for Kandla is complete and the market study near completion. These are a prerequisite for completing the financial arrangements. The Goa project awaits the decision of the U.S. Steel. Shell have not agreed to the Government's conditions to granting them an increase in refining capacity; the Government has not agreed to the Kuwait conditions for the supply of ammonia to the Moraji-Kuwait plant. The Birla-Kaiser project is being studied by the Government. The Tata project is still "up to the Cabinet", and Tata now expects their U.S. associates, Allied Chemicals, to withdraw from the project.

Unless some new capacity is started this year there will be no hope for reversing the rising trend of imports of fertiliser and fertiliser materials in the early 1970s. This will be the case even if it is assumed that consumption grows at a considerably slower rate than the Government has projected.

Summary

Consumption continues to grow rapidly though not at the level of the targets. Production is less than expected, but imports have been sufficient to create a condition of surplus. This has put pressure on the development of marketing and has reduced the requirements for imports in 1969/70. This respite will only be temporary; we can expect imports to continue to increase. If substantial new capacity is started within the next year it might be possible to reverse the trend by the early 1970s. Construction of some new plants has fallen behind schedule. There has been little change in the past two months in the prospect for the early implementation of any of the pending projects.

Export
Problem

The Indian Export Problem

The background

India's exports remained stagnant during the 1950s, largely because of excessively low priority given to exports by development policy. Much greater priority was granted to exports in the 1960s, with some success: from $1323 million in 1960/61, exports rose to $1714 million in 1964/65. However, the bulk of the increase occured from 1960/61 to 1963/64, when exports grew at an annual rate of 8 per cent. In 1964/65, the increase was less than 3 per cent and there was a mild decline in the following year.

During this period, export policies included the acceptance of an increasingly overvalued currency and complex subsidies aiming, in principle, at covering the difference between domestic and foreign prices of each commodity. This policy was quite successful in promoting the exportation of surpluses not absorbed by the domestic market, but it was not conducive to the building up of exports along lines of long-term comparative advantages.

In June, 1966, the rupee was devalued from Rs 4.76 to Rs 7.50 per dollar. At the same time, the previous export subsidy schemes, which covered most exports, were abolished; and export taxes were imposed on goods accounting for almost two thirds of exports. At the time the Bank felt that these measures were not conducive to the required and planned acceleration of export growth. These were its views: The combination of the devaluation and accompanying measures reduced to very little the net benefit to many exports, and even worsened the position of a substantial segment of exports of manufactures. The burden of export taxes in itself, and expectations relative to their revision hurt primary exports. However, even under the best circumstances, India's main traditional exports, jute goods and tea, cannot contribute substantially to future export growth. Other primary exports may grow, some very fast indeed if adequate policy measures are taken, but primary and semi-processed goods, taken as a group, cannot provide the impetus needed for the required overall fast growth. A major contribution has to be made by exports of manufactures which, as a group, must grow at an annual rate of at least 15 - 20 per cent for some years, involving of course a much higher rate for the most dynamic industries.

Even with the new exchange rate, a subsidy is required to overcome the attraction of the heavily protected, high priced domestic market, and the burden of that market's heavy costs. To build up long-term growth of exports along lines of comparative advantage, and to foster export-oriented investment decisions, the subsidy should be stable and uniform. Most exports - but at the very least exports of manufactures - should receive incentives at a fairly high, stable and uniform rate.

In the event, export duties were frequently reduced and subsidies reinstated and frequently increased though too late to prevent a precipitous fall of exports in 1966/67, followed by a very modest recovery in 1967/68. However, by April, 1968, the Bank could report that "as a result of these measures, by and large the effective export rate is more favorable than it was

in early 1966 for most goods". India's new industries responded well to this stimulus, amplified by recession on the domestic market, and in 1968/69 exports are likely to rise above the previous peak of 1964/65 despite the fact that the contribution of tea and jute together will be smaller by at least $100 million.

Present perspectives and policy needs

This unfortunately, does not mean that export policy is at present adequate. True, the need to increase exports now receives greater recognition than ever before. A greater measure of real priority is granted to exports. Exporting firms and export-oriented projects now receive specially favorable treatment. The Government is now more inclined to protect exports from temporary shortfalls of supply, even at the cost of curtailing domestic consumption. However, export promotion policy once again relies heavily on a selective combination of several types of subsidies, compulsions and taxes, the precise overall impact of which on individual exporters is quite often unknown. This selectivity is no longer systematically perverse, in the sense of aiming at offsetting the comparative disadvantages of every exporter, but it is often haphazard. Present policy is probably channelling towards exports a substantial portion of existing capacities surplus to domestic needs, now particularly abundant in the engineering and steel industries. However, substantial potential is still untapped; and there is little evidence that long-term export-orientation of productive capacity is being stimulated.

Conclusion

The export picture now looks more hopeful than it has for a long time. Yet, in view of the dire need to give Indian exports the impetus for sustained growth of at least 7 - 8 per cent per annum, it is yet far from satisfactory. The Government's commercial intelligence network - at present woefully inadequate - needs to be strengthened and geared to concrete needs. Many specific measures are needed to promote the production of particular export commodities. Better organization is necessary to take rapid and consistent decisions on all problems concerning exporters. The long-term profitability of those export activities which are consistent with India's comparative advantages has to be ensured by a simple, stable and uniform system of export incentives.

INDIA'S EXPORTS

1950/51 - 1967/68

($ millions)

1950/51	1357	1960/61	1323
1951/52	1533	1961/62 *	1426
1952/53	1264	1962/63	1499
1953/54	1132	1963/64	1665
1954/55	1252	1964/65	1714
1955/56	1344	1965/66	1688
1956/57	1333	1966/67	1538
1957/58	1250	1967/68	1594
1958/59	1210	1968/69	1730 **
1959/60	1317		

* From 1961/62 onwards export figures include exports from Goa and exports by parcel post and overland exports to Nepal, which raise the total by about $88 million.

** Forecast.

INDIAN EXPORTS

(US $ millions)

	1961/62	1964/65	1965/66	1966/67	1967/68
Tea	257	262	241	211	240
Jute goods	306	353	384	335	310
Cotton piecegoods	101	121	116	85	87
Leather (footwear and others)	58	66	71	95	83
Iron Ore	74	78	88	94	99
Agricultural products (other than tea and jute)	243	346	316	282	281
Engineering & Chemical	50	80	94	102	156
Mineral Ore (other than iron)	41	42	47	34	35
Textiles (other than cotton piecegoods)	-	-	47	35	30
Others	296	366	284	265	275
Total:	1427	1714	1688	1538	1594

Trade, East Europe

Trade with Eastern Europe

The volume of trade with Eastern Europe roughly trebled from 1960/61 to 1964/65, and like the rest of India's trade, shrunk somewhat in the following years. However, unlike trade with the rest of the world in which exports cover less than 60 per cent of imports, trade with Eastern Europe has been in rough equilibrium since 1964/65, and actually recorded a 10 per cent surplus last year. Thus, 1963/64 is the last year when India received substantial net aid from Eastern Europe.

The structure of India's exports to Eastern Europe is quite similar to that of her exports to the rest of the world. The structure of imports is heavily weighted by machinery and similar goods. As India's needs shift increasingly towards raw materials and components, and, within the capital goods category, towards more sophisticated items, she has increasing difficulties in obtaining in Eastern Europe enough of the type of imports she needs.

Incidentally, this point is frequently made by Government officials who argue that there would therefore be no advantage in rescheduling Indian debt to Eastern Europe, because it would be impossible to devote the resources so freed to additional worthwhile imports. This may well be true, especially as long as India's own engineering industries continue to be underemployed. If so, a reorientation of Indian export policy, to stabilise or reduce exports to Eastern Europe, would be desirable. However, a much preferable solution would be for the Eastern European trade partners to supply India raw materials and other goods of the kind she needs. This would be facilitated by the introduction of some elements of multilateralism, internal to the Communist bloc if need be, into payments arrangements with the Eastern European countries.

Education

Education

The Indian constitution directs the Government of India 'to provide free and compulsory education for all children up to the age of 14 years'. While this objective still remains a distant goal, the first three Plan periods saw a substantial rise in school enrollment with nearly 60 per cent of children between 6 and 14 years attending school in 1965/66 as against just over 30 per cent in 1950/51. Expenditure on education has grown from 1.2 per cent of GNP in 1950/51 to 2.9 per cent in 1965/66. Of this amount an increasing proportion has been spent directly by the Central and State governments while the private contribution fell from 32 per cent to 22 per cent during the period. Roughly one-eighth of government revenues is used for education, a total of about Rs 600 crores or Rs 13 per capita. In addition, education has generally accounted for about 10 per cent of the Plan expenditures during each of the first three Plans.

Indian education is characterised by sharp regional variations. Not least of these is in resource allocations which vary from Rs 18 per capita in Kerala to Rs 6 in Uttar Pradesh. These variations naturally extend to literacy as well. While the average rate of literacy in India was 24 per cent in 1961, having risen from 17 per cent a decade earlier, in Kerala it was 47 per cent while in Rajasthan it was only 15 per cent. As far as the pattern of education is concerned the system is basically the British one with 10 to 12 years of schooling, 3 years to graduate level and 2 years thereafter. Despite this, no two States are alike in the sub-divisions of the school years. Education in India is a State subject though the Centre has certain constitutional rights in relation to higher education, and vocational and technical education. As in other fields the Centre can also exercise its influence through the allocation of Plan resources.

The most striking manifestation of regional differences is the language dispute. The constitution laid down that Hindi was to be the official language and that after 15 years would be the only language used for official purposes. Until that time English could be used as well. This commitment has subsequently been postponed on two occasions, due to the pressure exerted by the Southern States. The compromise which has been presently evolved is the three-language-formula. This implies a pattern of language teaching in which general instruction is given in the mother-tongue and Hindi and English are introduced at the post-primary stage. In Hindi speaking areas an additional Indian language is studied. The regional language can still of course remain the official language within the State itself, indeed the whole re-organisation of States which took place in 1956 was on the basis of language. The three-language-formula has met with opposition both in the South where Madras has virtually eliminated Hindi teaching from its schools and in the North where anti-English agitation led to severe rioting in the course of 1967.

While in physical terms the achievements of Indian education are considerable it is often asked whether it has made any real contribution to economic development. Much of the thrust has been towards literacy at the primary school level and here the relative economic performance of the Punjab with very low literacy and a booming agricultural economy is often

measured against that of Kerala with the highest literacy rate and a low and stagnating level of per capita income. Secondary education is also subject to criticism for bearing little relation to the basic agricultural life which most students will continue to lead and, therefore, seriously disorienting them and creating a bias against agricultural and manual activities. Higher education is of indifferent quality with salaries and facilities too inadequate to attract better teachers. Such vocational education as does exist is no better, being geared in much too specific a fashion and operating at very high costs per student. In this overall picture some of the Institutes and Agricultural Universities stand out both for their training and research activities, but these are isolated bright spots. For external agencies much of the effort at improving Indian education will have to be directed at increasing the number and quality of these institutions.

The problem of educated unemployed continues to be a source of tension in Indian society. The expectation was created that the mere possession of a degree was a passport to a white-collar job. The consequent pressure for increased educational facilities led to a number of graduates with ordinary pass degrees in arts and commerce, quite out of proportion to the existing job opportunities. This situation has recently extended to engineers as well. Much of the violence which characterises Indian universities has its roots in this situation, though it is also related to a more general frustration and the post-Nehru 'law and order' problem. It is usually argued that the problems are not soluble within the specific context of education. In the short-run, however, even the most rapid rate of economic growth would not be sufficient to absorb the outpouring of graduates. In these circumstances higher education becomes a consumption rather than an investment good. A more selective approach to education and an all-round raising of standards would surely have a contribution to make. It might not reduce expenditure since teachers' salaries would need to be raised from their present pitifully low level. Such a step would need to be backed up by the political authorities with a degree of firmness; a commodity in short supply at present.

INDIAN EDUCATION

Item	1950/51	1955/56	1960/61	1965/66
Primary Stage enrollment as a percentage of age group (6 - 11)	42.6	52.9	61.1	74.4
Middle stage enrollment as a percentage of age group (11 - 14)	12.7	16.5	22.8	30.1
Secondary stage enrollment as a percentage of age group (14 - 17)	5.3	7.8	11.5	19.4
Percentage of the age group (6 - 17)	25.4	32.1	39.9	52.4
Engineering and Technology Degree:				
a. Intake	4,119	5,888	13,824	18,180
b. Out-turn	2,198	4,017	5,703	10,282
Engineering and Technology Diploma:				
a. Intake	5,903	10,484	25,801	49,900
b. Outturn	2,478	4,499	7,969	24,700
Agriculture and Veterinary (Degree)				
a. Intake	1,494	3,258	6,903	
b. Out-turn	1,307	1,228	2,690	
Medical Doctors:				
a. Intake	2,675	3,660	5,874	
b. Out-turn	1,557	2,743	3,387	
Nurses:				
a. Intake	-	3,200	4,000	
b. Out-turn	-	2,160	2,800	

Economic
Information

Information

Unreliable, tardy, ill-defined and ill-coordinated, or simply unavailable information in most economic fields is a most serious handicap to correct policy making. The Bank has often urged improvement in this respect, but can not describe, at least not without making a special study, the precise character of all the economic information required by the Government of India, nor the means for obtaining it. It did outline steps whereby progress could be achieved in some important fields, notably import licensing, physical imports and payments.

The past two years saw a measure of progress, but also of disappointment in this field. In 1967, a system was set up to keep track of foreign borrowing by the public and private sectors. Previously, though all such borrowing was subject to authorization by the Ministry of Finance and the Reserve Bank, no central records were kept and neither the total debt outstanding nor the debt service owed in any given year were known. The new system is supposed to provide these and other relevant data, but it remains to be seen how well it performs. This year, a modest start was made at setting up a system which would provide some measure of coordination between information on import licensing and on actual imports, the present lack of which is one of the most irksome obstacles to the elaboration of realistic payments forecasts and effective policies. In another field, with help from the Ford Foundation, a program was also made to prepare a more timely indicator of industrial production. However, the success of both programs depends greatly on the personal efforts of the interested Ministry of Finance officials and the two officials who played the leading part in elaborating these programs are now leaving India.

A major facet of the problem is the proprietory attitude of individual organizations towards the particular flows of information to which they have direct access. The setting up of a simple, speedy, coordinated and purposeful system primarily geared to the requirements of policy making would require informed and purposeful backing from a very high level; this has not been forthcoming. This is why, though some progress is being made, it is not commensurate either with the needs of economic policy-making, or with India's very considerable means in terms of statistical competence and manpower.

Administered Economic Controls

Direct administrative controls are the main tool on which the Government relies to implement its economic policies. All imports are subject to import licensing and are severely restricted. All large-scale production and investment activities (except in thirty odd specifically delicensed industries) are subject to the grant of an industrial license. No foreign collaboration can be agreed to, and no foreign business expenditure undertaken without Government permission. The prices and distribution of certain commodities are also controlled.

Yet a considerable relaxation of controls has occured in the past three years. In addition to the delicensing of several industries, there is now a general permission to produce goods not covered by the industrial license up to 25 per cent of total production. In practice, production in excess of licensed capacity is also allowed without much difficulty.

An even more striking modification of import control methods has occured. Before the devaluation of the rupee, import allocations of each firm were generally much lower than estimated requirements for imports of current production materials. They were based on some evaluation of these requirements, cut by some percentage throughout each industry. Under the new policy, put into effect shortly after the devaluation of the rupee, a priority sector covering a high proportion of total industrial production has been defined. Firms in this sector are to be given all their import requirements.

At present, new licenses are granted up to the value of imported materials used during the previous period. This greatly alleviates the risk of a speculative wave of imports for inventory building, though only at the cost of considerable difficulties for those firms whose production is fast increasing.

The type of funds to be used - free foreign exchange, various types of aid funds, so called rupee funds for imports from Eastern Europe - continue to be strictly determined by the licensing authorities. This is unavoidable, in view of the fact that last year only about a billion dollars of free foreign exchange were available to finance imports of more than two billion dollars. This fund-wise allocation seems to have proceeded fairly smoothly last year, largely because IDA funds were still disbursed and because a large share of tied non-project aid could be used directly by the Government for the bulk import of fertilizer.

Direct controls are nevertheless still used to reduce the imports of even the priority sectors. There are continued pressures - sometimes, but not necessarily, embodied in formal agreements - to reduce the ratio of imported components to the total value of production. This method leaves the manufacturer free to decide which items not to import. The other method is the "indigenous angle clearance" - each import request is scrutinised to eliminate from it any item which is available, or could conceivably be produced, in India. Price is not a consideration. This method is used both to protect Indian industry and to reduce the import

bill. While slip-ups do sometimes occur, and one hears occasional complaints that because of inconsiderate import licensing, the price of such or such item fell precipitously from 4 to 2.5 times its world level, Indian industry is by and large completely protected from foreign competition. The result of this absolute protection is the continued introduction of high-cost elements into the Indian industrial structure.

The present bleak aid picture and vast underutilization of industrial capacity do not form a good background for the rapid relaxation of import controls. Nevertheless, the absolute ban on competing imports must be replaced by some more limited and rational form of protection if the high-cost structure of Indian industry is not to be hopelessly reinforced and perpetuated. Administrative controls on production and investment are not without justification, in principle, but they have fulfilled their stated aims so badly that alternative means for orienting development - such as greater reliance on selective tax and credit policies - appear preferable. At present, most controls are administered without clear criteria, and often at the service of conflicting aims. Their greatest drawback may well be the enormous time and energy it takes to obtain final decisions.

Offshore oil

1. The present indecision of the Indian Government in the face of a number of proposals to undertake offshore drilling for oil reflects a pattern of behaviour also evident in other areas. It illustrates the sensitiveness of an important body of Indian opinion to the form and source of foreign assistance and the difficulty of the Indian Cabinet in reaching decisions on controversial issues. There are parallels between this case and the Cabinet's procrastination on the Tata fertiliser project.

2. In 1964/65 the Russians carried out a seismic survey of the continental shelf around India. Their work indicated several structures off the west coast in the Gulf of Cambay favourable to deposits of oil or gas. The Indian government sought Russian help for the exploration of these structures. The Russians declined because they had no experience or capability for drilling from floating platforms as would be required to explore the most promising formations, but they did offer to help with explorations in the shallower areas near shore where drilling could be carried out from fixed platforms.

3. Shortly thereafter, in 1967, Tenneco, an American oil company made a proposal to carry out deep offshore drilling at its own expense with the provision that if oil was found, a company would be formed in which Tenneco would have 49%, the Oil and Natural Gas Commission (ONGC) would have 51%. Production would be divided in the same proportion and India would have first refusal on Tenneco's share. Tenneco would assist in raising the Indian share of the foreign exchange and would repatriate 22% of the profits (18% if the oil is found in substantial quantities). In the light of oil agreements today, the terms Tenneco offered the Indian government should be considered very favourable.

4. At this point, the government was faced with the decision whether to let the Russians assist ONGC with exploration in the shallow regions or let the Americans (Tenneco) do the exploration in the deep water or possibly allow both operations to go ahead. The Tenneco offer was strongly supported by the Minister of Petroleum and Chemicals, Asoka Mehta. The Cabinet could not agree; no decision was taken. The offer was first made about eighteen months ago.

5. One of the major objections raised against the project was that a foreign company would own part of the oil. When it appeared that no action was imminent on Tenneco's proposal, two other companies made offers which met this particular objection. Zapata, an American drilling contractor, offered to drill on a strictly contract basis. Zapata would supply equipment and drill where the ONGC directed. It would be paid $2 million for transporting its rig from the Gulf of Mexico, and $15,000 a day for operating it. All risks would be borne by the Indian government. Mitsubishi of Japan offered to supply the Indians with an offshore drilling rig and technical assistance to operate it. Again the risk would be borne by the Indian government.

6. More recently, Bomin, a West German firm, has made an offer along the lines of Tenneco's original proposal. This also is a collaboration. The Germans would bear 75% of the risk and take 25% of the oil. Finally we

understand there is a Russian proposal to provide equipment and technical assistance to the ONGC for deep water drilling at some future date presumably after the Russians first develop offshore operations in the Caspian Sea. This option would postpone the deep water exploration for probably five years or more.

7. The multiplication of alternatives does not seem to have made the Indian decision easier. Cabinet concensus, which appears to be required in such matters, will be difficult. It will probably require a strong stand by the Prime Minister to reach any decision in the near future.

8. In the meantime, India's imports of crude oil are about 10 million tons a year and at the present pace of exploration and discovery they are expected to increase. Expenditure on oil imports are now about $150 million a year.

Political Situation

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Subject / Title
Confidential India - Political Situation

Exception No(s).

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Correspondents / Participants
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Subject / Title
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Subject / Title
The Indian Economy

Exception No(s).

☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☑ 7 ☐ 8 ☐ 9 ☐ 10 A-C ☐ 10 D ☐ Prerogative to Restrict

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Withdrawn by	Date
Tonya Ceesay	Apr 12, 2013

MEMORANDUM

To: Robert S. McNamara

From: Chester Bowles

Subject: The Rupee Problem

Source of Rupees

Most of the Indian rupees presently owned by the U. S. represent rupee payments by the Indian Government for PL-480 foodgrains. In addition, we have a sizeable amount that has come from rupee repayments of some past development loans. This latter account will grow by 700% in the next 40 years.

Roughly 12% of PL-480 rupees are set aside for US-uses (various expenses of the United States Government in India), about 8% are set aside for so-called Cooley Fund loans to U. S. businessmen in India and the remaining 80% are reloaned to the Indian Government.

At the present time these loans are over a 40-year period. The Indian Government pays 3% interest during a 10-year grace period and 3 1/2% for the remaining 30 years. Eventually both the original loan and the interest paid back is returned to the US-uses PL-480 fund.

Extent of Our Rupee Holdings

As of June 30, 1968 our PL-480 US-uses rupee holdings were $690 million. By 1973 they will be about $1 billion. Non- PL-480 US-uses rupees now amount to $333 million. As development loan repayments are made this account will grow to $2,261,000,000 by the year 2008.

While our absolute totals grow, inflation in India, about 10 per cent annually over the past three years, has cost us approximately $100 million of our rupee reserves. Devaluation also took a considerable bite.

How Rupees Are Now Being Used

The PL-480 US-uses account pays all American expenses in India, salaries for local employees, housing, the purchase of land, the entire USIS operation, etc. Consequently, this Embassy does not require a single foreign exchange dollar. Indeed, last year USIS earned $200,000 as a result of payments by the Indian Government for copyrights on American books, making us a net dollar earner.

The rupees which we loan to the Indian Government do not represent additional Indian resources; they are a demand on present resources. Therefore, when the Indian Government uses them to build schools, teachers' colleges, clinics, hospitals, etc. it must decrease its own rupee expenditures by an equivalent amount; otherwise the effect would be inflationary.

How Our Rupee Expenditures Are Restricted

The Bureau of the Budget has informed us that it will not stand in the way of any reasonable rupee expenditures that Congress may appropriate.

However, Congress, under the strong leadership of John Rooney, tells us that they will consider only appropriations in dollars which can later be translated into rupees. Thus, rupee expenditures are debated in terms of dollars and are inevitably slashed in an effort to hold down the dollar budget. Actually, whatever dollar appropriations are made go into the Treasury where they are credited to the Commodity Credit Corporation, an equivalent number of rupees then being made available for our use in India.

Past Efforts

I have tried for five years to explain this dilemma to the Bureau of the Budget and to the Congress and have failed almost completely. As a result these enormous assets which could greatly strenghthen our position in India, particularly at a time when the Soviets are spending three times as much on propaganda, are largely going to waste.

Three years ago I persuaded President Johnson, through his waiver rights, to set aside $300 million in rupees (at the old rate of exchange) for an Indo-American Foundation in India. This foundation would have an Indo-American board operating somewhat like the Carnegie or Rockefeller Foundations, emphasizing the economic, cultural and scientific fields. The available interest for grants would reach about $12 million a year which could be increased by dipping into the capital. However, this project was sidetracked by attacks from the Communists charging the U.S. with trying to take over the Indian educational system.

What Can Be Done With These Rupees

With our rupee assets we could easily triple our expenditures for informational purposes. For instance, Span magazine, with a circulation of 90,000, paid for entirely in rupees, could enlarge its circulation to at least half a million with no cost to the American taxpayer. Our newspaper, American Reporter, which appears every two weeks, could increase its circulation from 400,000 to 1 million with no cost to the American taxpayer.

Our text book reprint program, already running to 3 million books, could be quadrupled with no cost to the American taxpayer. The additional opportunities for cultural programs, American centers at Indian universities, etc. are almost unlimited.

However, valuable as these items would be, such expenditures would hardly make a dent in our holdings. On a larger scale, after setting aside enough to fund our programs and U.S. Government operations, we are considering the following:

(A) Present and future accumulations of PL-480 type rupees, minus amounts required for specific purposes for which non-PL-480 rupees are not available, would be deposited in an Embassy account designated "Special Development Fund." Economic development projects authorized by the Mondale Amendment which are additional to those the GOI might otherwise undertake would be supported by grants from this fund under conditions mutually agreed between the United States Government and the Government of India. The fund itself would remain in control of the United States Government.

(B) After establishment of the special fund, all appropriated expenditures in rupees would be drawn from our stock of non-PL-480 rupees.

(C) The Administration would seek Mondale-type legislation which would permit use of excess non-PL-480 rupees (or, more broadly, excess rupees, however generated) for economic development grants without the necessity for additional Congressional action. After the enactment of such legislation, such rupees would be added to the Special Development Fund.

This program, particularly the attempt to obtain legislative authority for use of the non-PL-480 rupees, will present many difficulties. Perhaps the greatest factor contributing to these difficulties will be the persistence of the impression in many minds in Washington that these excess rupee holdings represent US assets in India which can eventually be used on a large scale to ease our balance of payments problem.

Conclusion

The story of our rupee holdings in India underscores the confusion which can develop on what should be a clear proposition. Our principal difficulty is the fact that it is complicated, few people understand it and John Rooney appears to be firmly convinced that some day these rupees will be as valuable as an equivalent number of dollars.

In the meantime the Treasury, in an effort to reduce the dollar drain, has been pressing us to provide American tourists with rupees, thereby cutting their dollar expenditures. At a time when the AID program is down this is distressing since it deprives India of an opportunity to earn foreign exchange on its own.

November 19, 1968

USAID/India 11-19-68

Municipal Development Authority Bond Guarantee Scheme

What we have at this point are only some of the specifications for a scheme, not a properly worked out scheme itself.

The need for a scheme arises out of the conjunction of four facts:

1. Urgent needs for urban infrastructure investment are not being met. There are no good estimates of total requirements; some put the figure as high as Rs. 400 crores a year for the next 30 years. In any event the present shortfall of actual investment is more than half the need, and if something isn't done the relative gap is likely to widen.

2. Prospects for tax-financing these needs are dim. India already is struggling with the domestic "resources" problem; even with bold and imaginative tax policies it will remain difficult, particularly while agriculture is leading development and it is so hard (politically and constitutionally) to tax farmers. Urban redevelopment and development will keep getting the short end of the stick in revenue allocations.

3. There are a lot of loose private funds around largely or wholly escaping taxation and churning in such speculative uses as luxury rental housing, other urban real estate, and suburban land speculation -- wherein they not only distort investment allocations and are largely unproductive but have inflationary effects.

4. The U.S. has surplus rupee holdings, some of which could serve as a catalyst for channelling private resources into urban infrastructure building. The catalyst idea is essential: extensive direct funding of urban development out of U.S. rupees could itself be inflationary. But if some of our holdings can be used to trigger a redeployment of private assets this will be another, and much healthier story.

The attraction of loose private funds into the bonds of municipal development authorities would require:

(a) that the bonds pay a competitive after-tax market rate of return. This would mean either a sufficiently high before tax rate -- say something like 12 percent -- or a lower rate combined with tax exemption for such bonds a la the U.S. To advocate the latter might be to inculcate bad economics for the long pull. But a sufficient combination of the two sweeteners would have to be found.

(b) establishment of machinery for guaranteeing the bonds against default -- to reduce the investor's risk premium and thereby bring the needed interest rates down within politically feasible reach.

The idea for a scheme, therefore, would be for the Center to establish a semi-autonomous municipal development authority bond guaranteeing organization that stood ready to guarantee bonds that met its project, organizational, and minimum-rate-of-return criteria, and for the U.S. to grant this organization part or all of its guarantee fund. If, after study, the GOI decided to get part of the needed sweetening of net returns via the tax exemption route, Center legislation extending such exemption to municipal bonds would be needed. The guarantor organization might be established as a subsidiary of the Reserve Bank to speed the building of its capacity for financial vetting of issues seeking guarantees; it would in any event need to build some capacity for engineering and project review. Assuming reasonably good initial standards for extension of guarantees, the needed size of the guarantee fund would not be large; it would take only a small bite out of U.S. rupee holdings. Under present U.S. laws and procedures it should be possible to claim U.S. uses rupees of PL 480 origin for this purpose without Congressional appropriation, either via a liberal interpretation of the Mondale Amendment route or via the general waiver procedure.

10/31 To Mr. Staples
I am indeed grateful
to you for sending me
note to me. I shall
look forward to
meeting with Ensminger
+ Smuckler.
Bill

THE FORD FOUNDATION
320 EAST 43RD STREET
NEW YORK, NEW YORK 10017

INTERNATIONAL DIVISION
ASIA AND THE PACIFIC

October 29, 1968

Mr. Robert McNamara
World Bank
1818 H Street, Northwest
Washington, D.C.

Dear Mr. McNamara:

I know both Doug Ensminger and Ralph Smuckler, our Representatives in India and Pakistan, will appreciate the opportunity to talk to you on your coming trip about the Foundation's part in and opinions about development work in those respective countries.

Doug has already given you some of his ideas. The central problem in India (and to only a somewhat lesser extent in Pakistan) is population growth, and it will not take you long to sense the staggering burden population growth places on the already sorely strained fabric of Indian society. But that is no news -- you will presumably be talking about this from time to time -- and I would suggest that you keep your eyes and ears open for some of the currents that will affect India's performance in handling the population problem--and all its other national and international problems.

One of these is the increasing polarization that is likely to appear in the Indian countryside between peasant farmers who are making it big in the agricultural revolution and those very small smallholders and landless peasants who are not. The question is whether Indian agriculture can -- or should -- develop along Western patterns when Indian society is characterized by enormous poverty and lack of equality in distribution of resources. To put it another way, if American cities cannot withstand the welfare burden of displaced rural immigrants, how can Indian cities? Doug is much interested in this question, and so are some Indians, among them Mr. Gadgil, Deputy Chairman of the Planning Commission.

Answers to this and other problems will come from the new political leaders of India. Rising mostly from the countryside or urban slums to fill the

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vacuum left by the decay of the national Congress organization, these men strike me as small-town and rural in their orientation, shrewd rather than sophisticated, nationalistic and pro-Hindu, rather ignorant about foreign affairs and over simplistic in approaching high policy issues of development. That is, of course, a vast generalization, and you will find some young politicians who will fit the old, polished Nehruian mold. But it is not far-fetched to say that India also is producing its George Wallaces. Some of them are going to be in Parliament and running things in more than one State. If this happens, it will certainly have some positive sides as well as negative ones. India came close to losing its national will under the latter-day Congress governments, and without a national will there is not likely to be genuine development.

One of the interesting ideas we are concerned with at the moment in India is how to help the Planning Commission better relate its work to planning work done at the State level, where a great many large-scale projects originate. We have agreed to provide a staff of economists and engineers to assist the Planning Commission in experimental work along these lines, probably involving two States with the Center. The purpose is to achieve better project analysis and planning and investment coordination; to the extent India achieves this, she will be that much better prepared to handle foreign investment, private and public. Doug can also describe other work in prospect in economic planning and research.

Another area of great concern to the Indians and in which the Foundation has assisted is administrative reform. There is an Administrative Reforms Commission at work, its work can have great meaning in improving the qualtiy and capacity of the Indian civil service and the related bureaucracies, and I would hope you could form a view as to how the top levels of the Indian government see prospects for reform.

In both India and Pakistan, you will hear a great deal--and properly so--about agriculture, a subject with which we have been long involved in both countries. A common and extremely large problem in both countries is water--and you will be hearing about that, too. There is large agreement that the next great scientific and technological set of problems to be mastered as the subcontinent goes about agricultural development is water and soils. We and many

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others are working at different levels on this problem in both India and Pakistan. The subject is so enormous that not all the Asians and foreign agencies together have made much of a dent.

In Pakistan, I hope you will talk at some length with Mr. Smuckler and the Pakistanis about their national educational plans (not that this subject is to be avoided by any means in India). We have recently agreed to work with the Pakistan government in preparing its next five-year plan, which is to focus on educational and human resource development. The basic problem, as Mac Bundy would say about Ocean Hill-Brownsville, is fiscal. But there are huge political and social obstacles to educational development in Pakistan, and without positive development in the national educational system Pakistan's so-far good performance in development at some point is going to turn sour.

I am reluctant because of the pressures on your time to recommend a lot of names of people to talk to in India and Pakistan. I am sure your staff has given you more than enough. In India, I would hope that in addition to seeing the high level government people, you could ask Doug to set up a meeting with some of the academic economists at Delhi University and other centers and possibly a few of the very bright young Indian Administrative Service officers actively working on development problems. I have in mind, for example, a man named Sivaramakrishna, who is a regional development officer in Bengal.

In Pakistan, you are bound to meet M.M. Ahmed, secretary of the Planning Commission and a thoughtful and far-sighted senior civil servant. If you want a highly unorthodox and useful view on development, ask Ralph Smuckler to arrange for you to talk to Akhter Hameed Khan, the man who has headed the Comilla (East Pakistan) experimental projects in rural development for the past decade and one of the great iconoclasts -- and builders -- of Asia.

I enclose staff office reports for India and Pakistan. Have a fine trip. These are great countries.

Sincerely,

Eugene S. Staples
Head

Enclosures

cc: Messrs. Ensminger, Smuckler, Bundy, Bell

Population Control

THE NEED FOR ACCELERATED RESEARCH AND DEVELOPMENT

OF NEW AND BETTER CONTRACEPTIVES

THE GOAL: World Bank leadership to design and launch an intensive R&D program to develop several new and improved reversible, inexpensive, acceptable and effective contraceptives within five to ten years.

BACKGROUND AND DISCUSSION:

1. To those concerned with even mid-term projections for LDC development progress, the need for much better contraceptives in the shortest possible time seems obvious and urgent:

    * India will do well just to hold its own at a 2.5% per annum population growth rate by the late '70s -- even if its present intensive family planning program using current methods does in fact reach the entire rural and urban population. This rate has already eaten away nearly sixty percent of the gains from the first three Five-Year Plans and can readily do the same or worse in the decade ahead.

    * India's case is massive and acute but not essentially different from other very poor LDCs.

2. Despite this prospect, and a series of U.S. Government efforts to stimulate concern -- Senator Gruening's three years of hearings, the National Academy of Sciences' special efforts since 1963, STATE/HEW/AID Interagency Committee for two years, President Johnson's 1968 White House Committee on Population and Family Planning -- there is still no real sense of urgency or assignment of basic scientific priority to this task and there is no authoritative driving force to get an adequate R&D program launched.

    * While there is a lot of non-medical research going on under the heading of "population research" and even substantial basic bio-medical research which might eventually result in new approaches, the amount that is focused on laboratory testing and development of new improved and inexpensive methods is almost nil. Aside from investigation into the longer-term health hazards from the present generation of pills and experimental redesign of loops, in FY-1968 less than $300,000 in U.S. federal funds and probably no more than $1.5 million in U.S. private funds was devoted to R&D on new contraceptive means.

* Furthermore, such research as is underway is scattered all over the U.S. and the world with no agreed priorities, no systematic professional liaison among the scientists, much less any common executive authority or practical, comprehensive plan.

3. U.S. experience in such major R&D efforts as the Manhattan Project, NASA and DOD strongly indicates that authority to assign research priorities, spend funds and control their direction is not enough to produce an effective program. The exercise of the authority in each successful case depended on the will, initiative and competence of one or more key individuals who were strategically situated and personally dedicated to the enterprise. The prospect for an accelerated and effective R&D program on new and better contraceptives is at this time -- as in the 1938-41 period of nuclear bomb development -- foundering because of the absence of individual will and competence to assume responsibility to initiate the program.

    * The "Center for Population Studies and Human Reproduction" in NICHD has all the official authority it needs and could have greatly increased funds but has no comprehensive research program design and no initiative.

    * The private foundations have substantial professional competence but no authority, and even within their own institutional structures seem to have abdicated the principle of program and goal oriented research in favor of establishing a few labs and scattering individual scholarships all over the world, with the research goals of both determined by the whim of the scientist applicants.

    * The President's Committee is made up of the leaders of both these groups.

4. The opportunities and resources for a much more focused and intensive R&D program do exist.

    * There are at least six possibilities for radically improved techniques which have been identified and which would lend themselves to intensive, massive, quick, applied R&D treatment.[a/] Purposive review of the basic scientific work would unquestionably yield several more.

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a/ -- See Southam, Anna L. and Harkavy, Oskar, "Resources for Research in Reproductive Biology," discussion paper, Ford Foundation, New York City, Sep 1967, 13 pp; and Segal, Sheldon J. "Biological Aspects of Fertility Regulation," background paper, The Population Council, Rockefeller University, New York City, 1968, 19 pp.

* Research facilities -- e.g., at least four full-fledged laboratories -- and researchers -- perhaps 50 ten-man groups -- exist in the Free World that could quickly make important headway, if well organized and coordinated.a/

RECOMMENDATION:

1. What is most needed is initiative and leadership from someone seized with the importance of the problem who knows how an intensive applied research and development program should work and who can command the necessary resources. The World Bank -- uniquely -- has the stature, resources and above all the competence and leadership to organize a really effective program.

    * Its responsibility extends to all the less developed countries which need population control most acutely and which cannot succeed without better methods.

    * It has the standing and resources to enlist and lead the organizations and indviduals throughout the Free World which can achieve success. This is at least as much a question of commanding the time and enthusiasm of enough first-rate scientists as it is of finance.

    * The Bank organization knows what it takes to mount purposive R&D programs calculated to yield results fast. Its President has been responsible personally for one of the biggest and most successful set of R&D programs recently undertaken.

2. A major program, using existing research labs and scientists, should and could be started in 1969, hopefully in U.S. FY-1969. Given such leadership and sound planning the program should be able to gain financial support from the U.S. Government and other sources as well as from the UN and IBRD resources.

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a/ -- Ibid., Southam and Harkavy, pp. 2-7.

New Delhi
11/19/68

Agric. & Irrigation

OFFICE MEMORANDUM

TO: Mr. I.P.M. Cargill DATE: June 13, 1968

FROM: Gregory Votaw and Robert Picciotto

SUBJECT: INDIA - Lending for Agriculture

1. This note is complementary to Mr. Wapenhans' memorandum to Files dated March 25, 1968. It proposes a program of staff activity designed to increase the level of IDA lending for agricultural development in India. It does not deal with normal supervision activities or Indus-type studies. It assumes that current input financing may be provided by IDA in connection with high priority projects. If implemented, we estimate that the program could lead to about $400 million worth of external financing support for agriculture between now and mid-1972. You will recall that $260 million has been included under the heading of agriculture and irrigation in our five-year forecast of IDA operations. The balance of $140 million (if our project expectations materialize) might come from allocations now proposed for other activities (e.g. railways) -- or, alternatively, from parallel financing by interested consortium members.

A. THE NEED FOR MORE PROJECTS

2. The case for more agricultural projects in India can be simply stated:

(a) India has a third of the population and 30 percent of the cultivated area of IDA's less developed country membership. Agriculture originates half of India's domestic product, 70 percent of its employment and about three-fourths of its exports. By contrast, direct IBRD/IDA lending for agriculture in India ($64 million) amounts to 6 percent of the Bank Group's worldwide agricultural lending and to 4 percent of its total lending to India (Table 1). There has been no direct lending to agriculture by the Bank Group since 1962.

(b) Of course, Indian agriculture has been an indirect beneficiary of Bank Group investments in other sectors of the Indian economy. Through the industrial imports program, manufacturers of fertilizer, pesticides, pumps and tractors have secured supplies which are essential to meet a growing farmers' demand for modern inputs. 1/ Through the transportation loans and credits, elements of a basic railway and road infrastructure have been built and this is facilitating the growth of market-oriented farming. Finally, Bank Group assistance to the power sector has helped to meet a growing tubewell energy demand upon which much of the country's modern irrigated farming activity depends. However, the benefits which the agricultural sector has derived from such indirect aid and, more generally, of the Bank's role as

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1/ IDA has so far disbursed more than $40 million to agricultural input and tractor manufacturers.

Consortium Chairman are difficult to trace, even though they are substantial.

(c) The staggering capital and foreign exchange requirements of India's agricultural sector will not be met without external support. An estimate for annual foreign exchange outlays of $400 - $450 million, (including $310 million for fertilizers) would be roughly consistent with the original Draft Fourth Plan Outline (Table 2). Total capital requirements have been estimated at $1,400 million a year by Willem Holst, a consultant to the U.S. President's Science Advisory Committee on World Food Problems.

(d) There is a need to induce or accelerate change in domestic resource allocation, administration and attitudes within the sector. Past GOI policy (pre-1965) was characterized by low resource allocation and ambitious production targets for agriculture. Fortunately, the high priority of the sector is now being translated into increased availability of modern inputs to the progressive farming sector. 1/ But sustained progress will require not only increased resource allocation to the sector, but also a closer interdependence of the current input, institutional and infrastructure requirements of Indian agriculture (particularly in the water field) as well as more emphasis on specific schemes to guide the resource allocation process. This means more projects.

3. In many ways, the present task of building up a pipeline of projects in India's agricultural sector differs from the job which faced IDA in the early sixties when IDA's "first generation" of agricultural projects was conceived. This was a felicitous time from the standpoint of IDA resources. The Bank had not yet built the diverse staff strength and competence it now enjoys in the agricultural field. These elements, and the haste with which the projects were put together, explain the "civil engineering" orientation of IDA's assistance. The irrigation and drainage projects to which IDA provided support are implemented by irrigation departments rather than by departments of agriculture on which the major responsibility for agricultural development rests.

4. Recognition of the need for more and better IDA projects in Indian agriculture is of course not new. The two agricultural projects now being appraised (Tarai Seeds and Punjab/Haryana Drainage) are the results of considerable efforts since 1964 by the Projects Department, FAO and the India Division. Together, these two projects may account for about $27 million worth of lending. However, their importance reaches far beyond their size or their direct production merits. The Tarai project would strengthen a crucial component of the New Agricultural Strategy -- modern seed production

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1/ The following documents set forth the main elements of India's new agricultural policy: Report to the President of IBRD and IDA on India's Economic Development Effort, Volumes II to V, October 1, 1965, Indian Economic Policy and the Fourth Five-Year Plan, Volume II, May 23, 1967. The two economic reports dated October 13, 1967, and April 25, 1968, review the recent progress of this policy.

and processing. The Punjab/Haryana irrigation study would integrate groundwater utilization and surface system improvements -- particularly weak spots of current agricultural programs. Both projects experiment with administrative concepts which are relatively new to the sector. Tarai would be managed by an autonomous corporate entity grouping farmers, a land-grant type college, and input distribution firms in the public and private sectors. The project would also bring a major commercial bank into agricultural lending. The Punjab/Haryana project would provide expatriate consulting talent for an investment-oriented study in two states.

5. Beyond Tarai Seeds and Punjab/Haryana, there are no agricultural projects in the pipeline. This results from a number of related factors: uncertainty as to IDA resources; inadequate project preparation efforts by Indian authorities; differences in approach with respect to procurement practices and current input financing. But at least as important are the obstacles which result from the rules which seem to have governed IDA's relationship with GOI in matters of project design and selection. To these obstacles we now turn.

B. PREREQUISITES FOR PROGRAM SUCCESS

6. GOI's strategy in the aid game aims at maximizing the flow of non-project assistance from IDA both because of the special quality of IDA money and because of the exacting preparatory work associated with project finance. Central to the strategy is the assumed inelasticity of total IDA assistance to India. The game then consists in putting up relatively few agricultural projects for finance. Furthermore, even the few proposals which are put forward are more in the nature of requests for on-going programs rather than for specific investment projects. This strategy is effectively supported by rationing of information on alternative investment opportunities, by obstruction of other Indian players' entry into the game and by an allocation system of Central funds which leaves little incentive to individual States to go through the rigors (the Indians often use the term 'agony') of project preparation. 1/ The game is nearly over and successful, from the standpoint of the GOI player, when the focus of the project debate can be shifted from basic sectoral issues to IDA's own procedures, e.g. the channel for lending, current input financing, procurement policy, etc.

7. The behavior of the IDA player is more difficult to define since we run a much less disciplined team than GOI and also because we play the game in GOI's field, with teams originating from various divisions, departments and sections of the Bank and FAO. One danger of IDA's approach to the game is a growing dichotomy between its economic and sectoral analysis and its project work.

8. The following pre-conditions are necessary if the proposed program of staff activity in the agricultural sector is to be effective:

(a) Substantial support forthcoming from the Central and State Governments in all phases of IDA's project design work;

(b) Adequate headquarters support and leadership (involving the active participation of most sections of the Agricultural

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1/ IDA standards seem especially severe to Indian administrators given India's rather casual and imprecise approach to public investment budgeting.

Division) during project design as well as during appraisal and supervision;

(c) Close coordination between IDA's economic work and project identification activities;

(d) Substantial utilization of the FAO/Bank Program, UNDP and consultants at the post-identification stage.

9. Condition (a) is likely to obtain only if GOI understands that IDA plans to invest a stated minimum amount of its available funds in suitable agricultural projects identified by IDA. Under present operational assumptions concerning IDA replenishment, this would mean $260 million worth of agricultural lending over the next five years; higher allocation to the sector would be provided if suitable opportunities for investment are developed. GOI should also be informed that IDA proposes to intensify its contacts with individual States during its project work. For this purpose, we would expect working groups including State as well as GOI officials to be organized to work with IDA/FAO.

10. Condition (b) implies that India will receive adequate priority in the working program of the Agriculture Division. A rather large portion of the manpower requirements which the Division would have to meet would be for pre-appraisal activities. This is due not only to an empty project pipeline but also to the overwhelming importance of coordinated project design in a country so vast and complex as India requiring continuity of staff attention. The first year's program of pre-appraisal activities should be agreed with the Agricultural Division as soon as possible.

11. Condition (c) results from the substantial effort already invested by IDA in agricultural policy assessment. Consortium reporting in agriculture should increasingly focus on a review of the country's investment program and on the identification of areas and actions deserving special support within these programs. Close liaison with other external agencies (FAO, UNDP, AID) operating in India is crucial in this connection. Given existing staff limits in the New Delhi Office, such a role largely hinges on whether (as assumed above) adequate headquarters staff support is made available.

12. Condition (d) is prompted by past agricultural project experience in India which suggests that unless Bank staff is intimately involved in initial stages of project design, subsequent efforts run the risk of being counter-productive. Hence, the role of FAO/Bank, UNDP and consultants has been deliberately geared to 'second stage' design activities.

C. INVESTMENT PRIORITIES

13. Administrative weaknesses in India (as in most developing countries) constitute a major constraint on agricultural development. These weaknesses (divided authority, poor coordination, weak management) are widely recognized and there is mounting farmer-based clamor for more effective supporting services to agriculture. The art of project design will largely consist in selecting or building up institutional devices which fit local conditions and offer the promise of satisfactory performance. As in the case of Tarai, IDA could assist Indian farming through a variety of institutions - including

agricultural universities, research institutions, industrial firms and commercial banks. Indeed, diversification of the institutional structure at the service of agriculture should be one of the criteria of our project work.

14. Farm production growth in India is dependent on increasing crop yields and the area under multiple cropping. In general, timely moisture supply rather than adequate temperature is the bottleneck to plant growth and, given the irregular and seasonal pattern of rainfall, intensive land use calls for assured water control through irrigation. In many areas, past irrigation policy has failed to provide adequate water control on the farm for the following reasons: (a) lack of adequate networks of terminal channels and lack of adequate maintenance on major works; (b) absence of consolidation measures where fragmented holdings prevail; (c) neglect of drainage works; (d) surface water systems overextended in relation to water requirements; (e) groundwater exploitation poorly integrated with the surface water utilization; (f) system operation unadapted to crop requirements; (g) water charges leading to inefficient water use.

15. Given the above, better use of existing irrigation assets through complementary agricultural programs should have high priority in IDA's investment program. The proposed program of staff activity would help identify such projects in Madras, Andhra Pradesh and three or four other states. Integrated river basin development programming should be initiated. All these activities may require substantial support by consultants.

16. Untapped groundwater resources are substantial and their increasing use under private management is an encouraging trend under the New Agricultural Strategy. If accompanied by detailed hydrologic examination, groundwater exploitation should have high priority in IDA's program. This would require the design and operation of expanded credit services to farmers and contractors as well as step-up of power transmission and connection programs. A tubewell project is likely to emerge soon from the Punjab study. In addition, we propose that a new credit scheme be developed for promoting minor irrigation development and mechanization in Andhra Pradesh, Madras, Maharashtra, Gujarat and/or Mysore.

17. The 1968 bumper rabi crop has brought to the fore the need for additional grain storage facilities in surplus areas. But here again, IDA should take a broad view of the country's agricultural marketing and processing structure before detailed project preparation is undertaken. Basic policy issues, including the removal of inter-state trade restrictions, may have to be settled before IDA invests in this sector.

18. Much of the impetus behind the New Agricultural Strategy is the outcome of foodgrains breeding and research. Yet, there are disturbing signs that production-oriented research programs are not receiving the support they deserve. Furthermore, the gap between research and extension at the Center and in most States leads to poor diffusion of agricultural innovation. The program of IDA lending proposed here would back up seed research in connection with a multi-state seed production project. Strengthening of the research-extension link would be achieved through assistance to selected agricultural universities.

19. The diffusion of the new technology is creating a rising demand for short, medium and long-term credit which the existing farm credit

structure is ill-equipped to handle. An immediate need is to develop new production credit arrangements adapted to an emerging pattern of input distribution where private dealers are becoming increasingly active. A further need is to strengthen the development lending programs of nationally important financial bodies such as the Agricultural Refinance Corporation and its network of Land Mortgage and commercial banks.

20. The Government's New Agricultural Strategy has centered mainly on foodgrains production and, as a result, actions to promote commercial crop development (such as tea, jute or oilseeds) and livestock production (dairy and poultry) have been neglected. The intelligence available to IDA on these important areas of agriculture is limited. The proposed program of activity makes provision for fact-finding missions in these sectors to lay the basis for possible project activity by IDA.

D. THE PROGRAM

21. The proposed five-year staff activity program and the related project lending forecast which it supports are set forth in Tables 3 and 4. The manpower estimated to be required relates both to economic and (pre-yellow cover) project activities. It excludes coordinating and supporting staff requirements (e.g. India Division and Delhi Office) as well as staff commitments already made. On this basis, about 60 man-years would be required for the five-year program, i.e. an annual requirement of 12 man-years on the average. Of this amount, 32 man-years (i.e. about 6 - 7 man-years each year) would come from the Bank and the Bank/FAO Cooperative Program. This is only 10 percent of the existing professional staff capacity of the division. The balance of the requirements would be covered by consultants and UNDP, as follows (in man-years):

	Bank and Bank/FAO	Consultants and UNDP	Total
Project Identification (including economic work and sector analysis)	10.4	-	10.4
Feasibility Studies and Project Preparation	10.9	26.4	37.3
Project Appraisal	11.6	-	11.6
Total, 5 years	32.4	26.4	59.3
Annual Average	6.4	4.4	10.8

22. The following missions are proposed for the next few months:

(a) Fourth Plan Review in Agriculture: This review should involve contacts at the State level and concentrate on the weak areas of the New Agricultural Strategy, i.e. research, credit, water, export crops and livestock. In addition to the New Delhi Office staff, participation of an agronomist and a livestock specialist would be desirable. Field work should start in August.

(b) Credit Project: A fact-finding mission including a credit specialist, an engineer, an agronomist and an economist is required to identify in broad outline a project to promote private minor irrigation and mechanization in selected Indian States. The mission should review the activities and structure of the Agricultural Refinance Corporation and other financial bodies active in agricultural lending, undertake a preliminary assessment of regional demand for irrigation and mechanization credit and build the framework of further project preparation activity. Field work should start in September.

(c) Irrigation: An irrigation reconnaisance team including a senior irrigation engineer, an agricultural economist and an agronomist should visit India around November to review possibilities for improved planning and preparation of major irrigation projects. The mission's objective would be to identify potentially useful studies and project preparation activities in the irrigation field. It would undertake a preliminary review of investment possibilities in the Cauvery delta, in the Krishna-Godavari delta, as well as in other areas included in the Fourth Plan Outline list of major irrigation projects. It would discuss with the Government the need for integrated basin development studies. Another mission would probably have to follow up the results of this reconnaissance early next year.

(d) Fertilizer Program: The identification and preparation of a production scheme through private channels is proposed within the marketing area of the Tarai Seeds Project. Agronomists, credit specialists and marketing consultants would be required for this activity. Field work could start before the end of the year.

E. SUMMARY

23. To sum up, direct IDA lending to Indian agriculture has heretofore been too small in relation to the needs of the sector, and its potential for productive investment under the Government's New Agricultural Strategy. To foster development of an agricultural system in which essential elements are adequately balanced and coordinated, investment in the following fields would have high priority: irrigation, groundwater development, research, output diversification, storage and farm credit. More agricultural project activity would help guide the resource allocation process within India. It would also give additional weight to IDA's economic policy recommendations and lead to improved reporting on agricultural development to Consortium members. In the past, agricultural project activity has been hindered by lack of suitable projects, scarcity of IDA funds and the exclusion of fertilizer imports as such from IDA's operational scope because of IDA's reluctance to finance current inputs. Budgeting of a minimum share of IDA funds for agricultural projects, intensification of IDA's contacts at the State level, better coordination of IDA and FAO staff activities and relaxation of IDA's current input financing criteria are suggested for improved project work.

Table 1

INDIA - AGRICULTURE

IBRD Loans and IDA Credits

		Original Principal Amount			Principal Amounts Disbursed	
	IBRD	No.	$ Million	%	$ Million	%
1.	Agriculture	1	10.0	0.9	7.2	0.7
2.	Industry & mining	14	408.5	38.4	295.7	34.3
3.	Transport	13	448.6	42.1	441.0	51.2
4.	Public utilities	8	198.0	18.6	118.7	13.8
	Total IBRD	36	1,065.1	100.0	862.6	100.0
	IDA					
1.	Agriculture	7	67.5	7.5	57.0	6.9
2.	Industry	4	415.0	46.1	392.1	47.5
3.	Transport	5	275.5	30.6	252.4	30.5
4.	Public utilities	6	143.0	15.8	124.4	15.1
	Total IDA	22	901.0	100.0	825.9	100.0
	Total Agriculture	8	77.5	3.9	64.2	3.8
	Total IBRD & IDA	58	1,966.1	100.0	1,688.5	100.0

Table 2

INDIA - AGRICULTURE

Estimated Foreign Exchange Requirements[1/]
($ Million)

	Total	1968/69	1969/70	1970/71	1971/72	1972/73
Fertilizer						
Nitrogen	985	234	228	198	175	150
Phosphate	326	47	57	74	74	74
Potash	203	29	36	46	46	46
	1,514	310	321	318	295	270
Pesticides	199	39	40	40	40	40
Tractors						
Crawler Tractors	59	23	12	8	8	8
Wheel Tractors	110	27	23	20	20	20
Power Tillers	118	16	21	27	27	27
	287	66	56	55	55	55
Major Irrigation	230[2/]	46	46	46	46	46
Minor Irrigation	19	6	4	3	3	3
Other Uses	65[2/]	13	13	13	13	13
Total	2,314	480	480	475	452	427

1/ Based on Appendix IV, Vol. II (Agricultural Policy in India) of the Bell Mission Report - Indian Economic Policy and the Fourth Five-Year Plan, Asia Department, May 23, 1967. As a rough approximation, the requirements of 1970/71 have been carried through the following two years, except for nitrogen where a gradual decline after 1970/71 is assumed. The fertilizer price assumptions have been adjusted downwards to take account of recent price movements.

2/ Fourth Plan Outline assumption.

INDIA - AGRICULTURE

Indicative Projection of IDA Commitments

($ Million)

	1968/69	1969/70	1970/71	1971/72	1972/73	Total
1. Seed project I[1]	14					14
2. Punjab/Haryana I[2]	14					14
3. Fertilizer program[3]		60				60
4. Credit project[4]			60			60
5. Seed project II[5]			20			20
6. Punjab Haryana II[6]			30			30
7. Sone/Shetrunji/ Salandi/Purna[7]				35		35
8. Krishna Godavari[8]				25		25
9. Cauvery[9]				15		15
10. Grain storage[10]				30		30
11. Punjab/Haryana III[11]					35	35
12. Export crop development[12]					30	30
13. Livestock development[13]					25	25
14. Agricultural universities[14]	—	—	—	—	15	15
Total	28	60	110	105	105	408

N.B. This list is for illustrative purposes only. Many items could be deleted, others could be added and the amounts indicated should be viewed as rough orders of magnitude.

(Footnotes on next page)

Footnotes to Table 3

1/ The project cost is estimated at $27 million in the application (of which $18 million is classified as investment).

2/ The project cost including the study is estimated at $21 million (appraisal mission's back-to-office report).

3/ A scheme to provide fertilizer credit to farmers in selected Indian states through input dealers, commercial banks and other private entities. According to the Fertilizer Association Credit Committee, US$50-60 million would represent one-fifth of the fertilizer credit requirements of farmers to be met in 1969-70 by sources other than co-ops. The IDA scheme would concentrate on North India where Terai seed is expected to be marketed.

4/ A scheme to provide medium- and long-term credit to farmers of selected Indian states for groundwater development and mechanization. The scheme would also provide for groundwater surveys, power transmission facilities and contractors' credit. The borrower would be the Agricultural Refinance Corporation. The funds would be channelled through selected Land-Mortgage Banks and commercial banks. The following states, where Land-Mortgage Banks are already active, would be covered by the scheme: Andhra Pradesh, Madras, Maharashtra, Gujarat and Mysore.

5/ A $30 million project for development of 50,000 acres of seed production land in selected areas of Punjab, Maharashtra, Madras and Andhra Pradesh. The project would include provision for seed processing facilities and support of related research activities.

6/ A $45 million groundwater development project to finance approximately 20,000 private tubewells in Punjab and Haryana over a four-year period. This would benefit approximately 300,000 acres, at a cost of US$150 per acre.

7/ One or more "follow-up" projects designed to strengthen agricultural development programs within the command areas of existing IDA-financed schemes.

8/ This amount is based on a preliminary cost estimate of $38 million for a drainage and flood control project prepared by the Andhra Pradesh PWO department for the Kolleru basin and adjoining areas of the Krishna-Godavari delta. More detailed studies are likely to be required to make economic use of existing infra-structure and available groundwater.

9/ This amount is based on a preliminary cost estimate of $23 million for a scheme prepared by a Madras Government official. A UNDP survey is proposed for the area. Additional studies to integrate surface water system rehabilitation with groundwater utilization are likely to be required.

(continued on next page)

Footnotes to Table 3

10/ A project designed to increase grain storage capacity in selected surplus areas (0.6-0.7 million tons of storage at $100 a ton).

11/ An integrated surface water system rehabilitation-cum-groundwater development project in Punjab and Haryana covering 600,000 acres at a cost of $100 per acre.

12/ Support of export-oriented crop production programs (jute, tea, oil-seeds, tobacco, etc.). This might include plantation schemes or small holder development projects.

13/ Support of dairy and poultry schemes.

14/ Support of research, extension and education programs of selected agricultural universities.

Table 4

INDIA - AGRICULTURE

Tentative Program of Activities and Related Manpower Requirements[1]

	Mission Type	Expected Period	Man-Months* A	AE	E	FA	Total	Suggested Sources
Fourth Plan Review - Agriculture	Economic	July-Dec.'68	4				4	P
Consortium Reporting[5]	Economic	1969	4				4	P
Consortium Reporting[5]	Economic	1970	4				4	P
Consortium Reporting[5]	Economic	1971	4				4	P
Consortium Reporting[5]	Economic	1972	4				4	P
Consortium Reporting[5]	Economic	1973	4				4	P
Fertilizer Program - State Plan Review	PP	Sep.-Dec.'68	6	6			12	PE
Fertilizer Program - Organization[5]	PP	Jan.-Mar.'69		4		6	10	F,PC,PE
Fertilizer Program[5]	PA	Mar.-Jun.'69	3	4		3	10	PE
Credit Project	PI	July-Dec.'68	1	2	2	1	6	PS,PC or Ec
Credit Project[5]	PP	Mar'69-Mar'70	3	5	4	3	15	PC,Ec,FB
Credit Project[5]	PA	Mar.-Jun.'70		4	4	3	12	PC
Seed Project II	PI	Jan.-Jun.'69	1				1	PG
Seed Project II[5]	PP	Jan.-Jun.'70	3	4	3	3	13	PG,FB
Seed Project II[5]	PA	Oct.-Dec.'70	3	4	2	2	11	PG
Punjab-Haryana II[2]	PP	Jan.-Feb.'70	1	2	2		5	PI,PS
Punjab-Haryana II[5]	PA	Mar.-Jun.'70	3	4	4		11	PI
Sone/Shetrunji/Salandi/Purna[3/4]	PI	Jan.-Feb.'69	4	5	4		13	PI,D,Ec
Sone/Shetrunji/Salandi/Purna[5]	PP	Jun'69-Jun'71	48	24	24		96	C or U
Sone/Shetrunji/Salandi/Purna[5]	PA	Jun.-Aug.'71	4	5	4	4	17	P
Krishna Godavari[4]	PI	July-Dec.'68	1	2	1		4	D,PS,PI
Krishna Godavari[5]	PP	Jun'69-Jun'71	40	24	24		96	C or U
Krishna Godavari	PA	Jun.-Aug.'71	3	4	3		10	P
Cauvery[2]	PI	July-Dec.'68	1	2	1		4	PS,PI
Cauvery[4]	PI	Sep.-Dec.'70	1	2	1		4	PS,PI
Cauvery[5]	PP	Jan.-Jun.'71	6	6	6		18	PI,C,FB
Cauvery[5]	PA	Jun.-Aug.'71	3	4	3		10	PI
Grain Storage[4]	PI	Jun.-July'69	1	2	1		4	PS,PG
Grain Storage[5]	PP	Jan'70-Dec'71	24	24	24		72	C,U
Grain Storage[5]	PA	Mar'71-Jun'71	3	4	3		10	PG
Punjab-Haryana III[2]	PI	Jan.-Mar.'71	1	2	1		4	PS,PI
Punjab-Haryana III[5]	PA	Mar.-Jun.'72	3	4	3		10	PI
Export Crop Development	PI	Jan.-Jun.'69	3	4			7	PE,Ec or FB
Export Crop Development[5]	PP	Mar'71-Mar'72	4	4		4	12	PG,FB
Export Crop Development[5]	PA	Jul.-Sep.'72	3	4		3	10	PG,PC
Livestock Development	PI	Jun.-Dec.'69	3	4			7	PC,FB
Livestock Development[5]	PP	Mar'71-Mar'72	4	4		4	12	PC,FB
Livestock Development[5]	PA	Jul.-Sep.'72	3	4		3	10	PC
Agricultural Universities	PI	Jan.-Mar.'70	3	3		3[6]	9	E,PE,UE
Agricultural Universities[5]	PP	Jul'71-Jul'72	4	4		4	12	E,UE
Agricultural Universities[5]	PA	Jul'72-Sep'72	3	3		3	9	E
Total:			234	187	124	49	594	
Of which: (Consultants and UNDP			121	71	72	-	264	
(Bank and FAO/Bank			113	116	52	49	330	

1/ This does not include supervision activities except those likely to lead to new appraisal activity. It excludes manpower resources already committed. It also excludes supporting field and headquarters staff requirements (e.g., Delhi Office, India Division, etc.).
2/ A mission to review the progres of a study.
3/ A "reappraisal" mission.
4/ A mission to establish terms of reference for a study.
5/ Scope and timing dependent on the results of a prior mission.
6/ Education specialist.
* On the basis of 10 working man-months per man-year.

Nomenclature:

A	Agriculturist	E	Projects Depart.- Educ. Division	PS	Studies Section	PI	Project Identification
AE	Agricultural Economist	F	IFC	PC	Credit/Livestock Section	PP	Project Preparation
E	Engineer	P	Projects Depart.- Agri.Division	PG	Gen. Agriculture Section	PA	Project Appraisal
FA	Financial Analyst or Credit Specialist	Ec	Economics Depart.	U	UNDP Program	PS	Project Supervision
		PE	Economic Section	UE	UNESCO		
		PI	Irrigation Section	FB	FAO/IBRD Program		
				C	Consultant		

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Files August 30, 1968

R. Picciotto

INDIA - Agricultural Situation

1. The final unrevised estimate 1/ of the 1967/68 record foodgrains harvest is 95.6 million tons. (Tables 1 and 2). According to this estimate, wheat, barley and maize would have exceeded the previous 1964/65 high by more than one third, implying an annual growth in the intervening period of 10 per cent or more. Bajra would also have performed well with an output 15 per cent above the 1964/65 level, equivalent to an annual growth of 4.7 per cent. Jowar, on the other hand, would only be 4 per cent above the 1964/65 level while, at the bottom of the scale, rice would have scored 1.1 million tons below 1964/65 output.

2. A 95.6 million ton crop would only imply a 2.6 per cent annual growth from 1964/65 output. Yet, 1967/68 kharif weather conditions were, on the whole, quite favourable, even though excessive fall and winter rains affected standing crops in some areas. As for the 1967/68 rabi weather, it was, by all accounts, exceptionally good. With this in view, taking account of farmers' rising use of modern inputs and keeping in mind the political cuisine in which food statistics are cooked, the official figure (based on individual States returns) may well understate the harvest by 2-3 million tons.

3. The bulk of the shortfall between program expectations and officially estimated output relates to rice production (Table 3). As suggested above, the most likely explanation for the gap is that official rice output statistics for 1967/68 err on the conservative side. Still, there is no doubt that the "green revolution" has been more pervasive in the wheat areas of the North than the paddy fields of the Center and South. One cause for this uneven performance relates to the genetic base of the new agricultural strategy. Whereas the high yielding wheats have proved responsive to relatively simple management practices, resistant to diseases and pests and (insofar as the new amber seeded lines are concerned) well adapted to consumers tastes, the exotic paddy varieties released on a large scale in 1967 were subject to blight and insect attack (especially during the wet season), demanding in terms of cultural practices (particularly in the field of water control), and, in most instances, at variance with the tastes and cooking habits of the Indian public. No new paddy varieties are likely to be released in 1968/69. However, an excellent breeding program for rice is underway and a new varietal breakthrough may come within 2-3 years.

4. Total fertilizer consumption in 1967/68 was about 1.5 million tons 2/ -

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1/ Fully revised estimates are only issued by the Directorate of Economics and Statistics with a 2-3 years lag.

2/ $N/P_2O_5/K_2O$ consumption as follows (million tons): 1.01/0.34/0.17 as compared to 1.5/0.50/0.20 tons targets for the year.

of which 1.1 million tons may have gone to foodgrains. This is about 0.5 - 0.6 million tons above the volume which may have been applied to traditional foodgrains varieties in 1964/65. The High Yielding Varieties Program (HYVP), initiated in 1965/66 is reported to have covered 15 million acres in 1967/68. At recommended dosages (which are well below optimum levels) HYVP would have required 1.2 million tons of fertilizer nutrients 1/. But in practice, fertilizer use in many HYVP districts is reported to have been only a fraction of official recommendations. Late kharif arrivals explain part of the consumption shortfall. Fertilizer credit and marketing systems were limiting factors. Furthermore, for many HYVP participants, uncertain water supply on the farm made large fertilizer application a risky investment.

5. Cereal prices have declined as a result of the bumper harvest (Table 4). By June, the cereal price index had fallen below 1967 mid-year levels - the rapid drop in wheat prices following the bumper rabi crop being tempered by upward seasonal movement of rice and coarse grain prices. From January to June 1968, wheat prices dropped 18 per cent 2/. However, the decline would have been much steeper (and would have undoubtedly impaired producers incentives) had it not been for the recent Government procurement operations in North India. From April to July 31st, the Government procured 2.2 million tons of rabi foodgrains (mostly wheat) - 1.5 million tons in Punjab and Haryana. Lack of adequate storage in these States coupled with transport bottlenecks and inter-state movement restrictions led to some rain damage to procured grain 3/. However, the operation was relatively well managed in the face of unprecedented market flows - two to five times higher than in the previous year. Coordination between the various procurement, transport and financing agencies was more effective in Punjab/Haryana than in UP and Rajasthan where, at times, farmers' prices dropped 10-20 per cent below procurement levels.

6. Inter-state grain price differentials have narrowed in recent months. However, they remain substantial for rice which is still subject to severe movement restrictions between and within States (Table 5). In July 1968, course rice which was officially sold at Rs. 66 a quintal in Madras was transacted at Rs. 140 a quintal in Bihar. Procurement operations in surplus States are generally taking place by compulsory levy, 20-30 per cent below market prices.

7. Total procurement of kharif cereals (mainly rice) stood at 3.7 million

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1/ On the basis of the following recommended $N/P_2O_5/K_2O$ application (lb/acre): 80/60/40 for HYVP.

2/ The price drop was particularly marked in UP, the only major wheat producing State outside the Northern wheat zone. Thus, red wheat price at Kanpur fell from Rs. 107 a quintal in January to Rs. 73 a quintal in July.

3/ The late outbreak of the monsoon limited the extent of the loss.

tons by the end of July and may reach 4 million tons by the end of October (2 million tons short of target). By contrast, procurement of rabi cereals (mainly wheat) is already above target so that total procurement during 1967/68 may well reach 6.5 million tons. With regard to imports, arrangements have already been made to bring in 5.2 million tons of grain (of which 4.4 million tons of wheat). Total imports for the year are estimated at about 7.5 million tons by the Food Department. Releases from Central Government account to-date suggest that public distribution requirements may amount to 10 million tons during the year. If these import and public distribution expectations materialize, a 4 million ton stock carry-over into 1969 will be possible. By strengthening the Center's hand, this might further facilitate liberalization of foodgrains trade.

8. Subsidy on centrally issued foodgrains is being reduced. With effect from June 17, the issue prices for red wheat was raised from Rs. 67 to Rs. 70 and that of imported white wheat from Rs. 67 to Rs. 90.

9. The weather picture for the current year (1968/69) has so far been mixed. The onset of the monsoon was delayed a fortnight or more in Gujarat, Rajasthan and UP. While adequate rainfall for sowing has been received in most areas, it has been deficient over Rajasthan, Andhra Pradesh and parts of Mysore and Madras. On the other hand, heavy rains in Kerala and Gujarat have caused substantial flood damage. For the country as a whole, kharif crop prospects look distinctly less promising than last year. This holds for the cotton and groundnut crops as well as for rice and jower.

10. The 1968/69 Annual Plan provides for substantial expansion of fertilizer and high yielding seed availabilities (Table 6). Considerable step-up of development credit through the Agricultural Refinance Corporation and land mortgage banks is also provided for, particularly for minor irrigation. Increased utilization of major/medium irrigation potential is emphasised. The effort contemplated is broadly in line with subsectoral priorities. But it is much too early to assess performance or production prospects for the year. The irrigation system being what it is, these prospects will depend in large part on weather developments over the next few months.

RP/mm.:bh

TABLE 1.

INDIA - AGRICULTURE

Production Statistics.
(Million Tons)

	1963/64	1964/65	1965/66	1966/67	1967/68 (prel.)
Kharif Cereals					
Rice	36.89	39.03	30.66	30.44	37.86
Jowar	9.14	9.75	7.53	9.22	10.11
Bajra	3.73	4.45	3.66	4.47	5.13
Maize	4.55	4.66	4.76	4.89	6.28
Ragi	1.96	1.89	1.18	1.63	2.03
Small Millets	2.02	1.95	1.66	1.49	1.91
	58.29	61.75	49.43	52.14	63.32
Rabi Cereals					
Wheat	9.86	12.29	10.42	11.39	16.57
Barley	2.04	2.52	2.38	2.35	3.47
	11.89	14.81	12.80	13.74	20.04
Pulses	10.06	12.14	9.80	8.35	12.23
Total Foodgrains	80.24	89.00	72.03	74.23	95.59
Oilseeds					
Groundnut	5.22	5.89	4.23	4.41	5.83
Other	3.66	4.62	3.99	3.84	4.67
	8.88	10.51	8.12	8.25	10.50
Cotton	5.49	5.66	4.76	4.93	n.a.
Jute	6.19	6.02	4.47	5.36	6.37
Sugar Cane	10.60	12.03	12.10	9.49	9.50

Source: Directorate of Economics and Statistics.

(RP/mm)

August 26, 1968.

INDIA - AGRICULTURE

TABLE 2.

Production of Foodgrains

	1964/65		1965/66		1966/67		1967/68	
	Area (mil.ha)	Prod. (mil.MT)	Area (mil.ha)	Prod. (mil.MT)	Area (mil.ha)	Prod. (mil.T)	Area (mil.ha)	Prod. (mil.T
Kharif Cereals								
Rice	36.4	39.0	35.3	30.6	35.3	30.4	36.7	37.9
Jowar	17.9	9.7	17.5	7.5	18.1	9.2	18.6	10.1
Bajra	11.7	4.5	11.6	3.7	12.2	4.5	12.5	5.1
Maize	4.6	4.7	4.8	4.8	5.1	4.9	5.6	6.3
Ragi	2.4	1.9	2.3	1.2	2.3	1.6	2.4	2.0
Small Millets	4.5	2.0	4.4	1.7	4.6	1.5	4.8	1.9
TOTAL	77.6	61.8	75.8	49.4	77.6	52.1	80.6	63.3
Rabi Cereals								
Wheat	13.5	12.3	12.7	10.4	12.8	11.4	14.9	16.6
Barley	2.7	2.5	2.6	2.4	2.8	2.3	3.3	3.5
	16.1	14.8	15.3	12.8	15.6	13.7	18.2	20.1
Total Cereals	93.7	76.6	91.1	62.2	93.2	65.8	98.8	83.4
Pulses								
Gram	8.9	5.8	8.0	4.2	8.0	3.6	8.2	6.0
Tur	2.5	1.9	2.5	1.7	2.5	1.1	2.7	1.7
Other	12.4	4.8	11.6	3.9	11.6	3.6	11.7	4.4
	23.8	12.4	22.1	9.8	22.1	8.3	22.6	12.1
Total Foodgrains	117.5	89.0	113.2	72.0	115.3	74.1	121.4	95.5

Source: Directorate of Economics and Statistics.

(RP/mm)
August 28, 1968)

Estimated Response Compared to Actual Production.

	1 1964/65 Base 1/	2 Area Expansion (mil. ha)	3 Increment due to area	4 HYVP Area	5 Expected increment due to HYVP	6 1 + 3 + 5	7 Y Estimate (Unrevised)
Rice	38.0	0.3	0.31	5.3	3.50	41.8	37.9
Maize	4.5	1.0	0.97	0.9	0.45	6.0	6.3
Jowar	9.5	0.7	0.37	1.8	0.90	10.8	10.1
Bajra	4.5	0.8	0.31	1.0	0.25	5.1	5.1
Wheat	12.0	1.4	1.24	6.0	3.96	16.0	16.6
Other	18.5	(0.3)	(0.30)	-	-	18.2	19.6
	87.0	3.9	2.90	15.0	9.06	97.9 2/	95.6 2/

1/ Actual foodgrains output in 1964/65 was 89 million tons. We estimate that better than average weather accounted for 2 million tons output over the base.

2/ Since 1967/68 weather was above average (kharif was about as good as in 1964/65 and rabi probably better and since no account is taken of production programs outside HYVP (notably in irrigation), the variation between columns 6 and 7 is likely to understate the gap between estimated performance and new strategy expectations. Our best guess is that foodgrains production actually reached 98-99 million tons in 1967/68, of which 2-3 million tons might be ascribed to unusually good weather. This leaves a 2 million ton gap explained in large part by inadequate fertilization of HYVP areas, uncertain water supply and unforeseen pest and disease losses on some of the new grain varieties.

(RP/mm)
August 30, 1968)

INDIA - AGRICULTURE

Price Changes

	Wholesale Price Indices			
	Cereals	Rice	Wheat	All Commodities
January	186.8	179	181	198.6
February 1967	194.1	184	189	203.0
March 1967	194.5	182	191	203.4
April 1967	192.0	184	183	204.2
May 1967	196.2	191	180	208.4
June 1967	209.4	204	196	214.2
July 1967	225.6	216	218	220.5
August 1967	231.5	230	211	219.6
September 1967	228.1	227	212	220.3
October 1967	220.1	215	217	221.0
November 1967	208.5	202	206	215.2
December 1967	199.9	192	195	210.8
January 1968	208.0	200	212	209.7
February 1968	206.2	204	202	205.2
March 1968	202.2	206	191	199.6
April 1968	202.5	212	182	204.6
May 1968	203.2	217	172	205.7
June 1968	205.7	220	173	205.6

Source: Reserve Bank of India.

(RP/mm)
August 30, 1968.

INDIA - AGRICULTURE

TABLE 5.

Inter-State Price Differentials
(July 1968)

	Rice (Rs/Quintal)	Wheat (Rs/Quintal)
Andhra Pradesh	106	n.a.
Assam	66	n.a.
Bihar	140	100
Gujarat	n.a.	77
Haryana	84	n.a.
Kerala	96	n.a.
Madhya Pradesh	104	95
Madras	67	79
Maharastra	85	75
Mysore	127	n.a.
Orissa	113	n.a.
Punjab	n.a.	81
UP	119	74
West Bengal	159	78
Rajasthan	n.a.	73

Source: Directorate of Economics and Statistics.

(/mm)
August 30, 1968).

TABLE 6.

INDIA - AGRICULTURE

Selected Targets from 1968/69 Annual Plan.

		1967/68 Achievement (est.)	1968/69 Target.
1.	Minor/Medium Irrigation (million acres) 1/		
	Potential	20.9	23.1
	Utilization	15.2	19.3
2.	Minor Irrigation		
	Area (million acres)	3.0	3.6
	Loans for minor irrigation (Rs. million)	590.7	1031.0
3.	HYVP (million acres)	15.0	21.0 2/
4.	Multiple Cropping (million acres)	7.2	15.0
5.	Fertilizer Consumption (000 tons)		
	N	1,150	1,700
	P_2O_5	400	650
	K_2O	200	450
	Plant protection (million acres)	90	135

1/ Cumulative since First Plan

2/ 8.5 million acres under rice; 5 million acres under wheat and 7.5 million acres under maize, jowar and bajra.

DRAFT

Progress of the New Agricultural Strategy

1. The new agricultural strategy was launched in 1965/66 on the premise that the major bottleneck to agricultural development in India is the lack of modern inputs rather than a restrictive social framework - or the backwardness of the farmer. The main feature of the strategy is a considerable step-up in input availability - mainly high yielding seed and fertilizer under the High Yielding Varieties Program (HYVP). The strategy is also characterized by more groundwater use under private management, more intensive land use through multiple cropping and more diversified institutions at the service of agriculture, notably in the credit field.

2. The two first years of the new agricultural strategy were affected by exceptional drought. Thus, 1967/68 is the first year when adverse weather cannot be said to have annulled the effect of new strategy programs. As always in a country the size of India, the weather picture in 1967/68 has not been good everywhere. Cyclone and drought affected kharif rice production in Orissa and poor October-November rains affected rabi irrigation supplies in Mysore, Andhra Pradesh and Madras. Yet, pre-monsoon and monsoon rains were on the whole good, and winter rains were timely and plentiful. Barring exceptionally poor weather during the rest of the rabi season, the weather factor should have exerted a beneficial influence (or at worst a neutral influence) on production.

3. Advance estimates for 1967-68 put the foodgrains at 95 million tonnes. This is an all-time high for India. It is almost 27 per cent above last year's output. However, output in that year was abnormally depressed on account of the drought. A more sober perspective emerges if this year's production is compared to production in 1964-65 (a good weather year): the implied annual increase is only 2.3 per cent. A still longer view of production trends indicates that a 95 million tonnes crop would merely put production back on the same growth trend about which it has been oscillating since the early fifties. The question therefore arises as to whether a 95 million tonnes crop adequately reflects the efforts which have accompanied the introduction of the new technology.

4. A calculation comparing estimated performance with the expected response of the foodgrains sector to Government programs appears in Appendix A. Given the weaknesses of the data reporting system, this is hardly more than informed guesswork. There is also room for doubt with regard to: (a) base level for calculation [1]; (b) extent of new strategy program coverage; (c) net weather impact on production; (d) importance of area expansion; (e) usefulness of the individual yardstick approach (implying no complementarity in input use and constant returns to scale).

1/ Some long-time observers of the Indian agricultural scene have discerned a declining growth trend for foodgrains production in the early sixties. From their standpoint, even a 95 million tonnes crop represents a notable achievement - being above the trend of a declining growth trend line fitted to historical data.

5. On balance, the conclusion emerges that a 95 m. tonnes crop would leave a substantial gap between expected production response and actual agricultural performance. But considering the sad state of production statistics 1/ and the obviously encouraging response of farmers to Government programs, one is tempted to attribute the bulk of the gap to an understatement of the crop. Indeed, many skilled observers of Indian agriculture are talking about a crop around 100 million tonnes this year. An optimistic view is undoubtedly supported by the eagerness with which an upper layer of progressive farmers is taking to the new technology. But a lag between the very high yields achieved by a few farmers and significant increases in yields by a majority of farmers is bound to exist. Whatever the exact levels of production so far, a major task of public policy is the next few years will be to keep this lag to a minimum by attending both to the qualitative and to the quantitative aspects of input use by an increasing number of farmers.

HYVP

6. 1967/68 is the second year of the high yielding varieties program. The official advance estimate of coverage for the year is about 15 million acres but this is based on compilation of State estimates of varying accuracy and may overstate actual coverage by 2-4 million acres 2/. Of course even a coverage of 12-13 million acres would be an impressive achievement over a two-year period.

7. The most successful aspect of the program has been the large-scale introduction of dwarf wheat cultivation in Punjab, Haryana, Uttar Pradesh and Rajasthan. Under favorable conditions (i.e. in well irrigated and drained fields, with adequate fertiliser and improved practices) the new varieties can yield twice or three times as much as the traditional varieties. Some new varieties can be sown late thus opening up profitable opportunities for multiple cropping. 3/ Furthermore, consumer resistance to the dwarf wheats is being broken by the recent release of amber-seeded lines 4/ and

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1/ The Government has initiated improved statistical coverage in two States and two more States may come under this program next year. It will take several seasons for the new statistical apparatus to throw up reliable output data for the country as a whole.

2/ Individual States tend to press for high targets (and to report high achievement) in an attempt to increase their share of scarce supplies - particularly nitrogenous fertiliser. An independent estimate of coverage and better follow-up information on problems of implementation (e.g. through sample survey) is essential for improved management of the new strategy.

3/ Late sowing of Sonora 64 has helped to popularise the following rotations: sugarcane - wheat, potato - wheat, rice - wheat.

4/ Sharbati Sonora released in May 1967 was obtained from Sonora 64 red-wheat Mexican variety by mutation breeding. It is dwarf variety with amber and lustrous grain and good chapati-making characteristics. It has 15-25 per cent more protein than its parent. Other available amber-seeded dwarfs include S308, S227, Sona 227, Kalyan 227 and Safed Lerma.

rust disease problems have not proven serious so far. Already dwarf wheat cultivation could have covered 4-5 million acres during the 1968 rabi season.1/ It could well spread over 10-11 million acres next year, representing the bulk of the irrigated wheat acreage. Uniformly high yields over this acreage will, of course, await qualitative improvements in input use including more widespread use of the seed drill, land levelling, and timely irrigation.

8. India's rice economy has also received a significant boost following the introduction of new, fertilizer responsive, dwarf varieties of paddy, which, under favorable conditions, also yield two to three times more than traditional paddy varieties. However, it is apparent that a breakthrough of the same magnitude as for wheat has yet to materialize even though with the traditional improved varieties there is scope for considerable progress through double cropping, increased fertilizer use and better practices. Dwarf rice cultivation in 1967/68 may have covered 4-5 million acres, i.e. 15-18 per cent of the irrigated rice acreage. However, further expansion may prove more difficult than for wheat as the imported exotic varieties of paddy have proven less adapted to the Indian environment. In several areas of the Center and South, the severe incidence of blight disease and gall midge attack under high moisture condition has discouraged kharif cultivation of TN1 and IR8. Another stumbling block (aggravated by the food zones) has been the absence of high yielding lines with grain shape and cooking characteristics prized by the Indian consumer. Fortunately, research already underway is likely to break this bottleneck within a few seasons.

9. High yielding (hybrid) varieties of maize, jowar and bajra may have been cultivated over 3-4 million acres in 1967/68. This represents only 4-5 per cent of the aggregate area under these crops. As in the case of paddy, the genetic base of the hybrid program is relatively narrow as a result of inadequate public support of research activity.2/ Expansion of the area under hybrid jowar has been set back by the high susceptibility of the released hybrids to attack by the shoot fly. Similarly, released varieties of bajra have provided insufficient protection from bird attack. More significantly, progress of the hybrid program has been set back by poor seed quality 3/ partly the result of an inadequate policy framework

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1/ The Government's advance estimate for wheat under HYVP coverage is 6 million acres but this includes some improved non-dwarf varieties.

2/ Coordinated research projects for the wheat, maize, sorgium and millet programs have been under official consideration for almost two years. It seems that red tape and issues of State - Center financing (rather than the amounts involved: Rs. 22 million till 1970) have delayed approval. It is noteworthy that in 1965/66 tobacco received more financial support from the Center than all the foodgrains combined.

3/ There is likely to be enough certified seed output to double (or perhaps treble) the area under hybrids next year (1968/69). However, problems of processing, distribution, storage, and quality control have if anything increased with the rapid expansion of the program.

for private hybrid seed production. However, with the enactment of a Seed Act, better quality controls, an expanded processing industry and a new seed policy under active consideration by the Government, the basis for sound private seed activity is likely to be laid soon.

Water

10. The new agricultural strategy emphasizes the full utilization of available water supplies. Under HYVP, scarce inputs are channelled to areas which (at least in theory) enjoy assured water supply. However, in practice, even districts listed in this category are very much dependent on favorable rainfall for satisfactory production performance. Environmental limitations are compounded by the reluctance of most States to focus staff and resources in limited areas, leading to a thin spread of HYVP - over some 250 districts. The inadequacy of irrigation systems within most of these districts may have been a limiting factor to the penetration and spread of the new technology.

11. With the exception of jowar and bajra, assured water is indispensable to the expansion of the new agricultural strategy. Unfortunately, more than half of India's irrigated area of about 90 million acres is fed by minor banks, shallow wells and minor diversion works with insufficient water reserves for long dry spells - when water is most needed. A substantial proportion of the remainder is served by extensive canal structures designed for drought protection rather than for intensive year-round cultivation and operated in such a way that farmers at the tail-end of the system can never be sure that they will receive sufficient water at the right times to raise good crops. Against this background, it is not surprising that with the advent of the new technology, a great number of farmers have been eager to relax the constraint of inadequate water systems through investment in minor irrigation - often within the command areas of major irrigation schemes.

12. Reliable figures on the progress of minor irrigation under the new strategy are hard to come by. Yet, available statistics as well as field observations point to an impressive private irrigation boom. Before the new strategy was initiated, a total of about 400,000 wells were energized. In 1965/66, the annual rate of electric pumpset connections rose to 105,000. For the past two years, it has levelled off at about 140,000. But demand is still running ahead of supply. The waiting list is now about 250,000 and only lack of finance for transmission and connection is said to prevent the State Electricity Boards from raising the annual connection rate to 180,000. Private demand for tubewells in the Indo-Gangetic and coastal plains also exceeds public and private capacity to provide the necessary materials, supplies and supporting services.[1/] A major task of public policy in coming years will be to step up the level of these services

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1/ In broad orders of magnitude there may now be about 150,000 private tubewells in India irrigating about 3 million acres and 13,000 State tubewells commanding about two million acres.

several times over present levels. This will involve the design and operation of expanded credit services to farmers and contractors, the implementations of comprehensive groundwater surveys 1/ as well as a step-up in power transmission and connection programs. 2/

13. Another unfinished task in the water field is the rational utilization of past investments in major and medium-sized irrigation projects. 3/ The ultimate irrigation potential of the schemes initiated to date is estimated by the Central Water & Power Commission at about 44 million acres, of which about 18 million acres may be utilized. One obstacle to a fuller utilization of the country's water potential is the lack of trained personnel for soil and water management programs. In order to meet this need and develop field-tested standards for irrigation, drainage and land shaping designs, the Government has initiated pilot projects in three representative areas of the country: Mysore (black cotton soils); Punjab (drainage problems); UP (groundwater management). The Government is also considering implementation of more projects of this kind, particularly in delta areas. The use of credit by ARC (Agricultural Refinance Corporation) as a means of accelerating land development operations within the command area of major irrigation schemes (Nagarjunasagar, Tungabadra) as well as the improved coordination in these areas of the numerous public and private actions aimed at watershed development illustrates a new approach to irrigation policy. Already water utilization in the past two years is reported to have increased by 2 million acres per annum as compared to an average of one million acres a year during the early sixties. 4/ Yet, as things stand now, clearly not enough resources are being provided to ensure a steady expansion of the area in which water supplies and water control are adequate to realize the potential benefits of other agricultural inputs. An urgent need is for investment-oriented basin-wide studies.

Fertilizer

14. The new agricultural strategy is heavily dependent on a stepped-up fertilizer program. This is largely because the dwarf and hybrid varieties

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1/ In most areas, lowering of the water table has not proved a serious problem so far. However, the risk of proceeding without adequate hydrological data will increase as the program expands.

2/ A useful financing device used by some State Electricity Boards is to sell debentures directly to farmers who can use the debentures as security for borrowing from the Land Mortgage Banks and are ensured priority in the electrification program of the Boards. This device may have financed 5,000 connections last year. Methods to involve the commercial banks in similar financial devices are being looked into.

3/ Only about half of the 500 medium and major irrigation schemes undertaken since 1951 have been completed. However, nine major schemes account for a substantial proportion of the unused potential (Annex 3).

4/ These figures should be viewed as broad orders of magnitude based on water releases rather than on accurate area surveys.

require two to three times the fertilizer dosage recommended for ordinary varieties. At low level of fertility, India's traditional improved varieties yield almost as well as the dwarfs and hybrids. Furthermore, they require less care and water, fetch a better price and produce relatively more fodder than the HYVP varieties. The incentive to use high yielding seed is therefore intimately linked to the ease with which fertilizer can be obtained.

15. Since the beginning of the new strategy, nitrogenous fertilizer availability has risen by more than 40 per cent a year (compared to an average of 22 per cent in the early sixties.) Despite this, demand pressures have remained high because of the sharply increased fertilizer absorption of the new technology. To illustrate, the official HYVP targets have implied nitrogenous fertilizer requirements which account for the bulk of increased supplies of N (Annex 6). As a result, pressures to expand the area and crop coverage of HYVP have arisen and rationing of supplies by the public distribution system (still the dominant factor in nitrogenous fertilizer allocation) has continued to be a thankless task.

16. The fertilizer supply situation will considerably ease next year. In fact, nitrogen availability already improved in rabi 1968 following late arrivals and slow unloading of 1967 imports contracted for kharif 1967 (Suez, port congestion). The carry-over into 1968-69 may be of the order of 300,000 tonnes. Since import contracts for approximately 800,000 tonnes have already been passed and indigenous production is likely to exceed 600,000 tonnes, the situation could well arise when, for the first time, limitation in fertilizer demand rather than supply would stand in the way of reaching the Government's nitrogen consumption target (1.7 million tonnes). Phosphate and potash supplies are also easing considerably following improved arrangements for imports of sulphur, phosphate rock and potash.

17. Given the abysmal average level of fertilizer consumption in India, and the new attitude of the Indian cultivator towards chemical fertilizers, a buyer's market for fertilizers seems to be an unlikely prospect for the next few years provided arrangements for credit, distribution and sales promotion receive adequate attention. Reliance on public, mixed as well as strictly private manufacture and sales should help ensure that sales considerations are given sufficient weight in the fertilizer program. But to this end, the Government's liberal fertilizer distribution policies should implemented by all major States.

18. Long term prospects for fertilizer consumption will depend on whether the momentum of the agricultural revolution can be maintained into the seventies i.e. essentially on whether adequate water development programs are implemented in time and better supporting services become available to the commercial farming community.

Credit

19. The cooperatives are the main source of short-term credit to farmers. They now handle about 3,500 million worth of lending a year - of which about Rs. 1,000 million is for fertilizer. But on the basis of the Government's fertilizer consumption targets, the magnitude of farmers' short-term credit needs for fertilizers alone has been estimated at Rs. 5,200 million by 1970-71.

representing an increase of more than 30 per cent a year over present levels.[1/] In order to help meet the increasing demand, far-reaching steps must be taken to equip the co-operative credit institutions to improve their operations. New institutional devices (including the commercial banks) must be found to supplement the cooperatives, particularly in areas where they are weak. In this connection, it would undoubtedly be expedient to make use of private input dealers and perhaps the traditional money-lending channels, to support the rapidly expanding use of modern inputs.

20. In the term lending field, substantially stepped-up financial services to the progressive farming sector are emerging through more flexible procedures and additional branch facilities by Agro-Industries Corporations, Land Mortgage Banks and commercial banks. The loan advances made by the Land Mortgage Banks for medium and long term credit needs of owner cultivators have risen from about Rs. 120 million in the early sixties of Rs. 560 million in 1965-66 and Rs. 830 million in 1967-68. The 1968-69 credit target is Rs. 1,040 million. Perhaps as important as the increase in the scale of Land Mortgage Bank credit has been the gradual re-orientation of its lending towards productive purposes. However, there are many States where Land Mortgage Banks are weak. In order to meet the growing term lending needs of farmers, policies are being designed to encourage increased agricultural activity by the commercial banks. Already, expanded rediscounting facilities (through the Agricultural Refinance Corporation) and lower reserve requirements for agricultural loans have been instituted by the Reserve bank. Hire-purchase credit for tractors, sprayers, pumpsets is expanding. As tractor production moves up to substantially higher levels (from 3,000 in 1964 to an estimated 18,000 in 1968) and, generally speaking, as the manufacturing sector begins to respond more and more to the demands of the progressive farmers, credit could become a bottleneck to the modernization of Indian agriculture.

Prices

21 For the farmers which are the main focus of the new agricultural strategy (those in water secure areas) recent economic circumstances have been propitious. The surge in food prices following two drought years has rapidly reversed the gradual drift against the cereal farmer's terms of trade of the late fifties and early sixties. But with the return of the good weather, the cereal price index is declining. It dropped 11 per cent from October 1967 to February 1968 (as compared with a 17 per cent rise for the corresponding period last year).

1/ See the excellent Report of the Fertilizer Credit Committee of the Fertilizer Association of India, 1968. (p. 221). Early implementation of this report's recommendations to handle the increased credit demand is essential to the progress of the new strategy. Another official report sponsored by the Reserve Bank on the total rural credit picture is expected soon.

22. The need to revive the industrial economy and to curb inflation militates for food prices substantially lower than prevailing in mid-1967. On the other hand, the Government realizes that a foodgrains price slump below incentive levels must be avoided to maintain the momentum of technical progress in rural areas. This is translated in a readiness to purchase any amount of grain offered at the procurement price (thus making the procurement price a guaranteed floor price). The procurement price announced for common white wheat for rabi 1968 (Rs. 76 a quintal) compares with pre-harvest (February) prices around Rs. 76 - 80 per quintal in Punjab and Haryana and around Rs. 105 - 115 in Uttar Pradesh. Of course, the policy test will consist in making/guarantee hold despite heavy market arrivals expected in the Punjab during April, May and June. The removal of most central subsidies on public distribution of cereals was designed not only as an additional step towards normalcy in foodgrains trade and as a budget-saving measure but also as a step to avoid excessive price declines. 1/

23. Because of the large demand to replenish farmers and traders stocks in the Center and South, the total removal of food zoning would have facilitated the fulfillment of the Government's incentive price policy. In addition, such a course would have eliminated the irksome and wasteful price disparities (over and above transfer costs) which have narrowed since last year, but remain significant. For example, the price for coarse rice in Orissa is Rs. 15-30 per quintal below the Bihar price - as compared to a differential of Rs. 65-85 at the same time last year. Similarly, the Uttar Pradesh - Punjab wheat price differential is about Rs. 10-12, compared to Rs. 20-35 last year.

24. The Government recognizes the imperfections of the food zone system. But it views the bumper rabi crop as an opportunity to gain a stronger position on the foodgrains market through expanded procurement and buffer stock build-up. Procurement of kharif foodgrains was disappointing: it is unlikely to yield more than 3.5 - 4.0 million tonnes (as against an original target of 7 million tonnes). By bottling up wheat supplies in an enlarged Northern zone comprising Punjab, Haryana, Himachal Pradesh, Jammu and Kashmir and Delhi, the Government hopes to be able to procure 1.5 - 2.0 million tonnes of rabi foodgrains (as against an original target of 4 million tonnes). Without a monopoly position over long haul transfers of grain it feels that such procurement is unlikely to be reached at official prices. However, further zoning may be considered if the 1968 monsoon proves favorable and a substantial buffer stock has been set aside.

1/ Since January 1968, the issue price for coarse rice went up from Rs. 80 to Rs. 96 a quintal while the issue price for imported wheat went up from Rs. 55 to Rs. 67 a quintal.

25. A foodgrains crop of 95 - 97 m tonnes unless supplemented by imports would mean a per capita availability of only 152 - 156 Kg per capita (taking account of probable private stocks variations). This would only be marginally higher than availability during the past two years of acute scarcity and might imply continued pressures on food prices - a risk which the Government is reluctant to take. Foodgrains imports are therefore needed this year - quite apart from the requirements of Government stocking. With the maintenance of food zones, the public distribution system would need 8-10 m. tonnes for routine transfers and Government welfare objectives. Given the requirements of its buffer stock policy (3 m. tonnes by the end of the year), and a domestic procurement level which may reach 5-6 million tonnes, the Government estimates the year's import demand at 6-8 m. tonnes. All in all, skillful management will be required to strike a favorable economic balance between the varied objectives of the Government's food policy.

26. Implementation of the Government's price stabilization objectives requires additional storage. Total storage space available to the food agencies is now estimated at 5.2 million tonnes. A crash program initiated in the Punjab will only make a marginal addition to these facilities. In addition to expansion and modernization of facilities, there is need for a gradual shift of focus of the storage program from the ports to the interior. However, regional storage needs will depend on the future foodgrains movement policy of the Government.

Prospects

27. A projection of foodgrains production appears in Annex 12. It is based on Draft Fourth Plan Outline input targets for 1970-71 and on currently used yardsticks (which would be consistent with an output of 97-98 million tonnes this year). It assumes that multiple cropping benefits are already counted under the heading of minor irrigation and it takes no account of potential benefits from large scale irrigation projects. It yields a foodgrains output level of about 114 million tonnes in 1970-71 (6 million tonnes below the Government's official target). While not much should be made of this kind of rough arithmetic, the exercise does emphasize a view prevalent in many policy-making circles that existing fertilizer availability targets should be viewed as minimum requirements and that increased emphasis on water should characterize agricultural programs during the next few years.

28. There is no conclusive evidence yet that agriculture has embarked on a higher growth path as a result of the Government's new agricultural strategy. On the other hand, the trends in public and private agricultural activity described in this paper suggest that the agricultural economy is indeed picking up speed. In order to maintain the momentum generated by the growing acceptance of high yielding seed by Indian farmers, the Government will need to: (a) strengthen its support for research; (b) devote additional resources to water development; (c) maintain the priority of the fertilizer production and import programs; (d) build up stronger and more effective supporting services for the progressive farming sector; (e) remove the burden of archaic foodgrains marketing practices.

INDIA - 1968

Estimated Production Impact of the New Strategy

1. In order to assess the impact of the new agricultural strategy against the Government's targets, one needs a production base from which to start. It seems natural to pick 1964-65 as the base: this is the last agricultural year preceding the introduction of the new technology on a substantial scale. It is also the most recent year with production statistics relatively free from political bias. Foodgrains production during that year reached 89 million tonnes. However, this was, in part, a reflection of relatively good weather. A statistical analysis of production trends suggests that India's foodgrains potential for that year is nearer 87 million tonnes: this is the computed value obtained by fitting a constant growth curve to 1950/51 - 1963-64 production data. It falls midway between estimates computed on the basis of 3-year and 5-year moving averages and it is consistent with earlier official estimates of the 1965-66 production potential base (90 million tonnes).

2. Agricultural development schemes can generally be described in terms of physical units of works or supplies or (for a given input-mix) in terms of area coverage. The planning "yardsticks" in use in India measure, for the country as a whole, the average output expected from each physical or area unit involved in major works or supply schemes.[1/] Some important yardsticks at present in use at all-India level are listed below. They refer to the three main components of the new agricultural strategy.[2/]

Table I : MAJOR PRODUCTION YARDSTICKS [3/]
(in terms of incremental foodgrains production)

High Yielding Varieties Program	:	0.6
Fertilizer		
N	:	10.0 MT per MT (nutrient)
P_2O_5	:	6.0 MT per MT (nutrient)
Minor Irrigation	:	0.2 MT per acre

1/ The use of individual yardsticks assumes that benefits from each individual measure are additive. In fact, there is a close interdependence between all production factors so that the resultant benefits of a combination of measures may be either more or less than the sum of individual yardsticks.

2/ Yardsticks also exist for land improvement schemes, application of manure and improved seeds distribution. But, in order to lean on the side of caution, these yardsticks have not been taken into account in the assessment which follows.

3/ The HYVP yardstick is derived from Table A.1 attached. The other yardsticks are derived from Report on Estimation and Assessment of Production Potential of Crops, Ministry of Food and Agriculture, 1967.

3. As already noted, much of the impetus behind the new strategy results from the introduction of fertilizer responsive cereal grain varieties and their growing acceptance by farmers. The current agricultural year is the second of the High Yielding Varieties Program (HYVP). The official advance estimate of 1967/68 coverage is about 15 million acres. However, spot checks indicate that this may be an overestimate and that 13 million acres could be a better approximation of coverage. On the basis of the HYVP yardstick, this implies an addition of 7.8 million tonnes of foodgrains over the 1964/65 base (Annex 3).

4. The full impact of increased fertilizer supplies on foodgrains production is difficult to assess given the lack of reliable data on consumption. According to rough estimates which appear below, the response of traditional foodgrains varieties to increased 1967/68 fertilizer supplies might be in the neighborhood of 1.6 million tonnes.

Table II : PRODUCTION RESPONSE OF TRADITIONAL VARIETIES TO : N AND P_2O_5

(000 MT)

	N	P_2O_5
Increment 1967/68 over 1964/65	610	330
Less HYVP Requirements	460	210
Residual	150	120
Of which, applied on traditional varieties 1/	105	65
Response	1,050	510

5. Minor irrigation under private management has received official encouragement under the new strategy. The official projection of minor irrigation expansion between 1964-65 and 1967-68 is in the neighborhood of 9-10 million acres. It is estimated that about 80 percent of the irrigated area is under foodgrains so that, using the relevant yardstick of Table I, the expected contribution of the minor irrigation programs to India's foodgrains production potential works out to about 1.4 - 1.6 million tonnes.

6. Other components of the new agricultural strategy include:

(a) multiple cropping: the promotion of multiple cropping in areas having adequate irrigation may have covered 7.5 million acres in 1967/68. This program is linked to the availability of new short-duration cereal varieties but it is not clear how much of the expanded acreage has actually gone into foodgrains and how much into groundnut, cotton and other commercial crops;

1/ Arbitrarily taken as 70 percent of the residual.

(b) expanded plant protection measures: the acreage treated against pests and diseases is estimated to have tripled over the past two years reaching an estimated 126 million acres during 1967/68;

(c) mechanization: domestic production and imports of wheel tractors and power tillers has also tripled over the past three years. Total tractor requirements for the year are estimated at 25 thousand units.

To a large extent, those programs are complementary to those geared to the distribution of high yielding seeds and chemical fertilizers: no additional productive response has therefore been assumed on their account.

7. The minimum aggregate 1967/68 production response to the new strategy as it emerges both from official yardsticks and reasonable expectations of program coverage appears below. It conservatively assumes no increase in the area under foodgrains. It suggests that a 95.0 million tonnes crop in 1967/68, if confirmed, would leave little room for complacency as it would imply a gap of nearly 3 million tonnes (or about 25 percent) in relation to the expected impact of the new technology. There is, of course, room for reasonable doubt with regard to the appropriate base level for the calculation, to the net influence of the weather factor this year and (from a methodological standpoint) to the usefulness of the individual yardstick approach. On balance, given the obviously encouraging reaction of farmers to Government programs and taking account of the sad state of agricultural statistics in India, one would be tempted to attribute the bulk of the calculated gap to an understatement of the crop.

Table III : EXPECTED 1967/68 PRODUCTION COMPARED TO ESTIMATED PERFORMANCE

Expected HYVP Response	7.8 m. tonnes
Expected Fertilizer Response of Traditional Varieties	1.5 m. tonnes
Expected Minor Irrigation Response	1.4 m. tonnes
Other Programs	no allowance
Total Expected Response	10.7 m. tonnes
Base for 1964-65	87.0 m. tonnes
Total Expected Production	97.7 m. tonnes
Actual Estimated Production	95.0 m. tonnes
Gap	2.7 m. tonnes

Table No. 1

Estimated HYVP Production Response Compared to Actual Production

	1 1964/65 Production Base (Million MT)	2 1967/68 HYVP Estimated (Million acres)	3 Original 1/ Yardstick (MT/acre)	4 HYVP Increment (Million MT)	5 1967/68 Production Base 2/ (Million MT)	6 Actual 1967/68 Estimate (Million MT)
Rice	38.0	5.3	0.66	3.50	41.50	40.50
Maize	4.5	0.9	0.50	0.45	4.95	5.00
Jowar	9.5	1.8	0.50	0.90	10.40	10.50
Bajra	4.5	1.0	0.25	0.25	4.75	5.00
Wheat	12.0	6.0	0.66	3.96	15.96	15.00
Other	18.5	-	-	-	18.50	19.00
	87.0	15.0	0.60	9.06	96.06	95.00

1/ The maize, jowar and bajra yardsticks are those set forth in Indian Economic Policy and the Fourth Five Year Plan, Volume II - Agricultural Policy in India, IBRD report, May 23, 1967 on the basis of official statements, the wheat and paddy official yardsticks which stood at 1.00 MT/acre have since been reduced to 0.66 according to information furnished by the Directorate of Economics and Statistics.

2/ On account of HYVP alone.

ANNEX I

PRODUCTION OF FOODGRAINS

	1964/65 (Partially revised)	1965/66 (Partially revised)	1966/67 (Final)	1967/68 1/ (Est.)
Kharif Cereals				
Rice	39.03	30.66	30.44	40.50
Jowar	9.75	7.53	8.94	10.50
Bajra	4.45	3.66	4.50	5.00
Maize	4.66	4.76	4.99	5.00
Ragi	1.90	1.18	1.60	2.00
Small Millets	1.95	1.66	1.67	2.00
	61.75	49.43	52.15	65.00
Rabi Cereals				
Wheat	12.29	10.42	11.53	15.00
Barley	2.52	2.38	2.45	2.50
	14.81	12.80	13.98	17.50
Total Cereals	76.56	62.23	66.13	82.50
Pulses				
Gram	5.79	4.21	3.61	5.50
Tur	1.89	1.74	1.73	2.00
Other	4.77	3.85	3.53	5.00
	12.44	9.80	8.92	12.50
Total Foodgrains	89.00	72.03	75.05	95.00
Trend Line Projection 2/	87.80	89.70	92.80	94.00

Source: Ministry of Food & Agriculture

1/ This is only an informal guess as the detailed State returns for the Kharif season were not available.

2/ Extrapolation of a constant annual growth curve fitted to 1950-1965 data. The exercise yields an annual growth rate of 2.8 per cent.

ANNEX 2

High Yielding Varieties Program

(000 acres)

	1966/67 Target	1966/67 Estimated	1967/68 Target	1967/68 Estimated	1968/69 Target	1970/71 Target
Kharif						
Paddy	1,540	1,258	4,137	3,583	7,561	
Maize	488	342	1,183	606	1,459	
Jowar	342	117	1,481	730	2,720	
Bajra	283	101	1,077	929	2,777	
Total	2,653	1,818	7,858	5,898	14,522 2/	
(%)	(100.0)	(68.5)	(100.0)	(75.1)		
Rabi						
Paddy	1,715	937	2,022	1,650 1/		
Maize	422	171	483	250 1/		
Jowar	585	354	1,159	1,000 1/		
Bajra	93	44	150	100 1/		
Wheat	1,593	1,337	4,562	6,000 1/		
Total	4,428	2,848	8,376	9,000	6,478 3/	
(%)	(100.0)	(64.3)	(100.0)	(107.4)		
Total for year	7,081	4,661	16,234	14,898	21,000 3/	32,000
(%)	(100.0)	(65.8)	(100.0)	(91.8)		

Not available

Not available

Source: Ministry of Food & Agriculture

1/ An informed guess based on a conversation with the Extension Commissioner.

2/ The source for this figure and the kharif breakdown is a Ministry of Agriculture booklet entitled "Breakthrough in Agriculture through Better Seeds" (1969).

3/ This target is preliminary. If the kharif target is kept at 14.5 million acres, the rabi and total targets may well be raised.

ANNEX 3.

Information on Important Irrigation Projects Included in the 1967-68 Plan.

	Estimated Cost	Spent Up to March'68	Ultimate Irrigation Potential (000 acres gross)	Potential created (March'67) (000 acres gross)	Potential Utilized (March'67) (000 acres gross)
Nagarjunasagar (AP)	1,600 1/	1,327	2,200	650	15
Gandak 2/ (Bihar & UP)	1,417	498	3,560	-	-
Kangsabati (West Bengal)	360	204	950	130	72
Mahanadi Delta (Orissa)	343	263	1,610	720	610
Rajasthan Canal (Rajasthan)	747	505	1,300	273	137
Tungabadra (AP and Mysore)	500	193	820	780	670
Kosi (E) (Bihar)	450	406	140	67	50
Chambal (MP and Rajasthan)	743	641	140	89	31
Parambi Kulam Ahyar	379	360	240	75	18
	6,539	4,397	10,960	2,784	1,595

1/ Includes power

2/ Nepal also deserves benefits from this project

ANNEX 4

Rural Electrification.

	States	Approved programme 1967-68		States capacity for energising pump sets 1967-68		No. of applications pending (March 31, 1967)
		Outlay (Rs 00000)	Target	Outlay (Rs 00000)	Target	
1.	Andhra Pradesh	384	15000	534	19,000	79,897
2.	Assam	60	100	60	1,000	nil
3.	Bihar	650	15000	800	19,000	24,532
4.	Gujarat	350	7620	550	11,820	14,000
5.	Haryana	150	3000	250	5,000	13,000
6.	Jammu & Kashmir	45	100	45	100	Nil
7.	Kerala	40	1000	100	2,500	900
8.	Madhya Pradesh	217	5000	350	9,000	6,800
9.	Madras	600	30000	700	35,000	27,800
10.	Maharashtra	720	10300	800	11,800	not available
11.	Mysore	600	20000	600	20,000	14,178
12.	Orissa	88	1600	100	1,800	330
13.	Punjab	350	7000	450	9,000	24,634
14.	Rajasthan	175	4000	250	5,800	10,757
15.	Uttar Pradesh	750	17000	1350	30,000	27,126
16.	West Bengal	200	2500	300	4,000	547
17.	Nagaland	06	-	46	Nil	-
	Total (States)	5385	1,40,120	7,283	1,84,820	2,44,921

Source: Planning Commission.

Annex 5

Minor Irrigation

	Status at End of Third Plan 1965/66	Estimated construction during 1966/67	Estimated construction during 1967/68	Target for 1968/69
Nos. Wells (000)				
Boring and deepening of Dug Wells	205.00	130.00	140.00	150.00
Construction of Shallow Tubewells 1/ - Private	90.00	32.00	42.00	52.00
Construction of Deep Tubewells - State	11.90	1.00	1.00	1.50
Nos. Pumpsets (000)				
Electric	498.80	137.00	140.00	
Diesel	535.20	78.00	75.00	250.00

Source: Ministry of Food and Agriculture

1/ Including "filter points", a name for shallow tubewells sunk in sandy soils in Madras State.

ANNEX 6

A. Fertilizer Consumption
(million MT)

	N	P_2O_5	K_2O
1964-65	0.49	0.15	0.08
1965-66	0.58	0.13	0.09
1966-67	0.83	0,28	0.13
1967-68 (est.)	1.15	0.50	0.20
1968-69 (proj.)	1.70	0.65	0.45
1970-71 (proj.)	2.40	1.00	0.70

B. Nitrogen Availability
(000 MT)

	1 Production	2 Imports	3 Total	4 Increase	5 HYVP Demand	%
1965-66	238	376	614	-		
1966-67	309	575	884	270	250	93
1967-68 (est.)	360	900	1,260	646	570	88
1968-69 (proj)	600	1,100	1,700	1,086	740	68
1970-71 (proj)	1,300	1,100	2,400	1,786	1,140	64

Source: Ministry of Food and Agriculture
Fertilizer Association of India.

Annex 7

Index Numbers of wholesale prices

(1952-53 = 100)

	Agricultural Commodities	Total	Foodgrains	Rice	Wheat	All Commodities
March 1956	96	95	86	88	83	99.2
March 1957	106	102	96	98	94	105.1
March 1958	102	103	91	102	84	106.1
March 1959	113	113	102	92	110	112.1
March 1960	117	116	100	106	92	118.7
March 1961	126	118	99	101	92	127.5
March 1962	119	118	100	103	92	122.9
March 1963	121	124	102	111	86	127.8
March 1964	138	141	124	122	113	138.9
March 1965	154	154	142	128	144	151.0
March 1966	178	175	156	158	136	174.0
March 1967	214	218	201	183	190	202.9
January 1968		238	221	200	212	210.0

Annex 8

Inter-State Price Relationships

(Coarse milled rice)

	Rs. per quintal January 1968	
Madras (Kumbakonam)	67.25	
Kerala (Trivandrum)	96.00	
Ratio		143
Andhra (Vijayawada)	73.72	
Mysore (Shimoga)	118.00	
Ratio		161
Orissa (Sambalpur)	85.00	
Orissa (Cuttack)	96.00	
Average Surplus	90.50	
Bihar (Dumka)	136.64	
West Bengal (Contai)	171.20	
West Bengal (Sainthia)	122.00	
Average Deficit	143.00	
Ratio		158
Madhya Pradesh (Raipur)	95.00	
Maharashtra (Nagur)	101.82	
Ratio		107

ANNEX 9

Ratio Price Index to Total Commodities Index

	Agricultural Commodities	Food	Foodgrains	Rice	Wheat
1965					
March	102.0	102.0	94.0	85.0	95.5
June	101.0	101.5	87.5	81.0	83.5
September	102.5	103.0	92.5	86.0	84.0
December	104.0	102.0	91.0	87.0	83.0
Average	102.4	102.1	91.0	85.0	87.0
1966					
March	102.0	100.5	89.5	91.0	78.0
June	102.5	103.0	90.0	89.5	76.5
September	103.5	104.5	91.5	91.3	78.2
December	103.5	105.0	97.0	89.5	88.0
Average	103.0	103.4	92.0	90.0	80.0
1967					
March	104.0	107.5	99.0	90.0	93.5
June	102.5	114.0	103.0	93.0	88.0
September	103.0	118.0	109.0	100.5	96.0
December	105.0	112.5	102.0	91.5	93.0
	103.6	114.0	104.0	94.0	85.0

Annex 10

Ratio of wholesale prices of selected items of wholesale cereal price index

	All Manuf-acturers	Iron & Steel	Fertilizer	Cement	Cotton Mfg.	Kerosene
1960	108	140	91	128	121	89
1961	125	148	94	136	125	97
1962	121	149	87	140	122	94
1963	117	145	83	137	120	117
1964	101	126	69	117	102	101
1965	101	125	63	116	96	99
1966	97	n.a.	n.a.	n.a.	90	n.a.
Dec.30,1967	83	108	62	97	79	79

ANNEX II

Indices of Food Policy 1963-1967, and Projection for 1968

	1963 (est.)	1964 (est.)	1965 (est.)	1966 (est.)	1967 (est.)	1968 (proj.) 1/
1. Gross Production (m. tonnes)	80.2	80.6	89.0	72.0	75.1	95.0
2. Net Production (m. tonnes)	70.1	70.6	77.9	63.0	65.7	83.1
3. Imports (m. tonnes)	4.6	6.3	7.5	10.3	8.7	7.0
4. Public stock increase (m. tonnes)	-	-1.2	1.1	0.1	-0.4	3.0
5. Net availability (m. tonnes)	74.7	78.1	84.3	73.2	74.8	87.1
6. Population (m.)	464	476	487	499	511	524
7. Per capita availability 2/ (Kg/year)	162	164	173	147	146	166
8. Per capita availability 2/ (Oz/day)	15.6	15.8	16.7	14.2	14.1	16.0
9. Marketable surplus 3/ (m. tonnes)	21.0	21.2	23.3	18.9	19.6	24.9
10. Procurement (m. tonnes)	0.8	1.4	4.0	4.0	4.3	5.5
11. Public Distribution (m. tonnes)	5.2	8.7	10.1	14.1	13.0	9.5
12. Foodgrains Price Index (June)	111.5	134.2	140.0	168.0	231.0	n.a.
13. All Commodities Index (June)	134.0	146.8	158.3	186.2	217.0	n.a.
14. Relative Foodgrains Price (12/13)	83	92	89	91	106	n.a.

1/ This is the policy alternative which emerges from official Government statements. It assumes the maintenance of the food zone system.

2/ Excluding private stock variations on which no reliable data are available.

3/ Arbitrarity taken as 30 per cent of net production.

ANNEX 12

Projection for 1970/71 1/

	Base 1964/65	Assumed 1967/68	Projected 1970/71
HYVP (Million acres)	-	13.00	32.50
N requirement (million MT)	-	0.53	1.14
P_2O_5 requirements (million MT)	-	0.22	0.46
Total N. Supplies (million MT)	0.50	1.10	2.40
(On Traditional FG Varieties)	0.38	0.49	0.53
Total P_2O_5 Supplies (million MT)	0.15	0.50	1.00
(On Traditional FG Varieties)	0.11	0.20	0.28
Increase in Minor Irrigation (million acres)	-	9.0	21.00
Production (million MT)	89.00	97.80	113.9
Net Production (million MT)	77.87	85.6	99.7
Imports (million MT)	7.45	7.0	-
Government Stock Increase (million MT)	1.06	3.0	
Consumption per capita (Kg./year)	173	171	177
Population (million)	487	524	563
INCREMENTS OVER BASE (87 m. tonnes in 64-65)			
HYVP		7.80	19.5
N/P_2O_5 on Trad. Var.		1.56	3.2
Minor Irrigation		1.45	4.2
		10.81	26.9

1/ The assumed yardsticks are: HYVP - 0.60 MT/acre; N on trad.varieties - 10.0 MT/MT;
P_2O_5 - on trad. varieties - 6.0 MT/MT;
Minor Irrigation - 0.2 MT/acre.

FOOD GRAIN PRODUCTION AND IRRIGATION DEVELOPMENT

Introduction

1. About 50% of India's land area, equivalent to some 390 million acres, is arable.1/ The net area under cultivation is about 330 million acres. Two crops per year are grown on about 65 million acres. The total area cropped in any one year is thus around 400 million acres.

2. Some 300 million acres, i.e., 75% of the cropped acreage, are devoted to food grain production. Most important is the grain grown during the summer (wet season, or kharif, crop) with around 90 million acres of rice and 95 million acres of sorghum and millets. During the winter (dry season, or rabi, crop) cereals, principally wheat, account for another 40-45 million acres. The remainder is mainly pulses and maize.

3. Food grain output fluctuates significantly from year to year. The most important determinants of annual production are the area sown to grain crops and the timeliness and intensity of the monsoon rainfalls. No sustained improvement in the national trend of average yield levels is as yet discernible, though in localized areas impressive progress has been achieved. The crop year 1967/68 was a record, with an estimated grain crop of 95.5 million metric tons. This was, however, only 6.5 million tons higher than the 1964/65 crop of 89 million tons. Because of adverse weather conditions and reductions in the areas sown to food grain crops the annual production in 1965/66 and 1966/67 was 72 million tons and 74 million tons respectively.

4. Various types of irrigation facilities serve a gross command area 2/of slightly more than 100 million acres. The area actually irrigated was estimated at about 63 million acres for the production year 1965. In many areas irrigation facilities are used as drought insurance only. They provide supplementary water if the rains are late or insufficient but often do not provide adequate water control. Even for major surface irrigation systems the design criteria has often been to maximize the area commanded rather than tooptimize water deliveries per unit of land. This makes even irrigated land very vulnerable to rainfall fluctuations as evidenced by the effects of the severe droughts of 1965/66 and 1966/67.

1/ FAO Production Year Book 1967, Vol. 21, Rome, 1968.

2/ Gross command area is the total acreage within reach of a distribution system, though the whole area may not necessarily receive irrigation supplies.

Food Grain Production and Policy

Production

5. The following table summarizes the experience of the last four years:

Acreage and Production of Major Food Crops

	1964/65		1965/66		1966/67		1967/68	
	Acres	Metric Tons	Acres	Metric Tons	Acres	Metric Tons	Acres	Metric Tons
	(million)							
Summer (Kharif) Cereals								
Rice	91.0	39.0	88.3	30.6	88.3	30.4	91.8	37.9
Maize	11.5	4.7	12.0	4.8	12.8	4.9	14.0	6.3
Sorghum & Millets	91.4	18.1	89.5	14.0	93.9	16.8	95.7	19.1
Sub-total:	193.9	61.8	189.8	49.4	194.0	52.1	201.5	63.3
Winter (rabi) Cereal								
Wheat	33.8	12.3	31.7	10.4	32.0	11.4	37.3	16.6
Barley	6.7	2.5	6.5	2.4	7.0	2.3	8.2	3.5
Sub-total	40.5	14.8	38.2	12.8	39.0	13.7	45.5	20.1
Pulses	59.5	12.4	55.3	9.8	55.3	8.3	56.5	12.1
TOTAL FOOD GRAINS :	293.9	89.0	283.3	72.0	288.3	74.1	303.5	95.5

Rice is by far the most important food grain accounting for about 40% of total production and 30% of the area sown. Aside from fluctuations due to weather, the extent of rice production, both in terms of area and total output, has remained fairly constant since the beginning of this decade. Winter cereals indicate an upward trend in production as well as area sown.

6. It is noteworthy that the introduction of new high-yielding rice varieties with shorter maturity periods make double cropping of rice possible, though this has yet to make a significant impact on overall production in India. In some irrigated areas substantial use is already being made of such varieties and the results have been rather encouraging. Other high-yielding varieties (wheat and hybrids such as maize and sorgham) also find ready acceptance in many areas of India.

7. The disconcerting aspect of Indian food grain production is the absence of sustained improvements in average yield levels despite the comparatively low starting point. This is illustrated by the following comparison:

Growth of Yields

Country Comparison - National Averages 1/

	Rice (Paddy)			Wheat		
	1962	1964	1966	1962	1964	1966
	(Metric Tons/Acre)					
India	0.58	0.67	0.53	0.37	0.31	0.34
Ceylon	0.81	0.83	0.77	-	-	-
Pakistan	0.63	0.70	0.65	0.34	0.34	0.31
Korea	1.49	1.86	1.79	0.84	0.88	0.86
Japan	2.14	2.08	2.12	1.06	1.02	1.02

1/ FAO Production Year Book 1967, Vol. 21, Rome, 1968.

To a large extent this must be ascribed to the lack of fertilizer in the past. The recent decision of the GOI to give priority to fertilizer imports together with the use of better varieties on a larger area should have a discernible impact on yield levels in due course. There are no readily available statistics to make a similar comparison for yields on irrigated and non-irrigated lands. About 35 to 40% of the major food crops are grown on irrigated lands. Yields under proper irrigation are likely to exceed substantially in many instances the averages shown for Ceylon and there is basically no reason why they should not reach those of Korea.

8. The record crop of 1967/68 of 95.5 million metric tons of food grains is a remarkable achievement. However, the year to year fluctuations shown in para. 5 indicate the difficulties of forward projections based on a single year's experience. The food grain requirements for 1970/71 are estimated at 110 million metric tons or roughly 15 million metric tons more than last year's record crop. It will require intensive efforts and continued priority for agriculture if this target is to be reached.

Policies

9. The priority allocation of foreign exchange for the importation of fertilizer by GOI has already been mentioned. Under a recent Government decision, fertilizers and improved seeds are now being distributed under priority area programs. These so-called "High-Yielding Varieties Programs" and "Intensive Agricultural Area Programs" will eventually extend to 32 million acres with assured water supplies. The High-Yielding Varieties Program (HYVP), initiated in 1965/66, is reported to have covered 15 million acres in 1967/68. The HYVP target for 1968/69 is 21.0 million acres, of which 8.5 million acres would be under rice, 5.0 million acres under wheat and 7.5 million acres under maize, jowar (sorghum) and bajra (millet). The area programs are entrusted to special extension service cadres and given priority in the allocation of essential inputs. It is planned that some 50% of the target area will be served in the forthcoming crop year.

10. Within the framework of improving the agricultural services and institutional framework necessary to achieve the full utilization of expanded irrigation capacity, we recommend serious consideration be given to financing current inputs such as fertilizers, such as has been proposed for the Tarai Seeds project.1/ Especially where adequate irrigation supplies are available, the timely provision of additional current inputs would improve the efficiency of resource use and the resulting output should relieve import requirements with a value perhaps many times that of the foreign exchange spent on the inputs. The effectiveness of current input financing will depend largely on the extent to which the creation and improvement of necessary institutional services support their distribution and use.

11. The recent food crises in India have led to considerably improved domestic terms of trade for agriculture. For instance, wholesale prices for wheat and rice nearly doubled between 1960 and 1966:

Selected Wholesale Prices 2/

	Wheat	Rice	
		Coarse	Fine
	(Rs/100 kg)		
1960	41.7	44.7	69.6
1966	71.9	88.0	79.9

While this has undoubtedly had a stimulating effect on 1967/68 production, the maintenance of food zones and food management by Government is likely to militate against the full impact of such incentives. The GOI is, however, in a somewhat difficult position to effect changes since, under the constitution, agriculture is the responsibility of the States. It appears that many officials in the GOI now agree that a gradual elimination of food zoning is desirable.

12. Such a move would require the availability of a Stabilization Stock.3/ Indian estimates put the size of such a stock at 9 million tons. Others 4/ feel that a minimum-sized stock should be not less than 5 million tons. This in turn requires the availability of appropriate grain storage facilities and, as India approaches self-sufficiency in food grains, a reorientation of the nation's storage systems commensurate with the changing flow of grains. This is under discussion in the Ministry of Agriculture, New Delhi, but no plans are available to us as yet.

1/ Memorandum of June 14, 1968: Tarai Seeds Project, Fertilizer Financing (Messrs. Darnell and Picciotto to Messrs. Evans and Votaw). (Attached)

2/ FAO Production Year Book, 1967, Vol. 21, Rome, 1968; the prices shown for fine rice are not directly comparable as they include amendment of quality classification.

3/ In addition it would probably require subsidy programs for the provision of food to the poor.

4/ Willard W. Cochrane, Food and Agricultural Policy for India, Ford Foundation, New Delhi, 1968.

Irrigation Development

Institutional Aspects

13. Irrigated agriculture in India suffers from a division of administrative responsibilities. Medium and major irrigation and drainage works are the responsibility of the Ministry of Irrigation and are usually diversions of river flows to the irrigated land. So-called minor schemes are handled by the Ministry of Agriculture, where water may be supplied by means of shallow wells, tubewells, tanks or from small streams and springs. These latter schemes, however, command a large area (see para. 16). Groundwater resource surveys are carried out by the Exploratory Tubewell Organization. Technical approval rights for major undertakings and for those involving more than one State rest with the Central Water and Power Commission.

14. Cooperation between the various institutions is not too well developed. This has led in the past to a situation where major surface system designs were principally engineering-oriented with little regard to the needs of the farmer, i.e, maximum command area rather than optimum watering depth per unit of land, and construction of major distribution works with field channels left for the farmer to dig. This lack of cooperation has also retarded the integrated development of surface and groundwater resources and the operational reorientation of existing systems towards the opportunities and needs for double cropping. It may also account in a number of cases for the priority allocation of resources for new developments at the expense of maintenance of existing systems.

15. There is an urgent need to coordinate the activities of the various departments involved and to introduce new irrigation planning concepts. The latter are dealt with in para. 19 below.

Existing Development

16. At the end of the Third Plan Period (1966) irrigation development covered a gross command area of about 100 million acres :

Gross Command Area Under Irrigation 1/

	Prior to 1950-51	1st Plan	2nd Plan	3rd Plan	Contemplated Under 4th Plan
	(million acres)				
Minor Schemes	32.0	41.5	50.5	63.6	80.6
Medium and Major Schemes	24.0	27.1	32.3	37.8	46.8
Total:	56.0	68.6	82.8	101.4	127.4

The net irrigable area was estimated in 1965 at 63 million acres. 2/
A number of medium and major schemes were started in the Second and Third

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1/ Government of India, Planning Commission, "Fourth Five-Year Plan - A Draft Outline", Delhi, 1966.

2/ FAO Production Year Book 1967, Vol. 21, Rome, 1968.

Plan Periods and have not yet been completed. At present the GOI is giving priority to the completion of such projects over the initiation of new projects.

17. Up to now, there has been only limited groundwater development within the service areas of existing surface irrigation systems. Because of the recharge from rainfall and irrigation applications, it is believed that a substantial potential exists for such development which would (a) provide additional irrigation water, (b) enable double cropping through integration of groundwater supplies together with reorientation of the operation of the surface systems, and (c) avoid rising water-tables and/or waterlogging. A more systematic investigation of such possibilities is expected in the context of the Punjab Study to be financed under the Punjab Drainage Loan. This would deal with the Indian part of the Indus river system, where rising water tables and some waterlogging are already being observed.

Development Potential

18. No comprehensive assessment of the development potential for irrigated agriculture is available to us. India is laced with eight major river systems, all of which have been partially tapped for irrigation. Two, the Indus and the Ganges-Brahmaputra systems, involve international water rights problems. Most of the others run through more than one State. The systems and the States involved are shown in the following table:

Major Indian River Systems

River System	Riparian States	International Waters
Ganges-Brahmaputra	Uttar Pradesh	East Pakistan 1/
	Bihar	
	West Bengal	
	Assam	
Indus	Haryana Punjab	West Pakistan
	Himachal Pradesh	
	Jammu and Kashmir	
Narmada	Gujarat	
	Madhya Pradesh	

1/ Discussed in memorandum to Mr. McNamara from Mr. Cargill of May 14, 1968, and updating memorandum from Mr. Feldman to Mr. Cargill of October 2, 1968.

River System	Riparian States	International Waters
Tapti	Gujarat	
	Maharashtra	
	Madhya Pradesh	
Mahanadi	Madhya Pradesh	
	Orissa	
Godavari	Andhra Pradesh	
	Maharastra	
Krishna	Andhra Pradesh	
	Maharashtra	
	Mysore	
Cauvery	Madras	

Some developments on these rivers are as much as two thousand years old and are still operational.

19. What is now required is a systematic review of the development potential of these river basins, followed by integrated river basin development planning. Such planning should be comprehensive in the sense that it orients water resource development, both surface and groundwater, to the needs of increasing double cropping, which requires different delivery schedules than those at present obtaining in existing systems. It would also need to cover power aspects since the lifting of groundwater will require extensive rural electrification and may lead to significant changes in the time distribution of power demand.

20. Meanwhile, there is substantial scope for the completion of on-going irrigation projects, the most urgent of which are shown in Annex I. In addition, the Draft Outline of the Fourth Five-Year Plan lists some 54 irrigation projects in various stages of preparation and development, a number of which could probably be proceeded with in the absence of detailed river basin development planning. Furthermore, groundwater development, as stated in para.17, offers considerable potential.

Policy Aspects 1/

21. Aside from planning concepts and design criteria dealt with

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1/ For policy aspects relating to Bank financing of irrigation projects see also memorandum of Mr. Chadenet and Mr. Bell to Mr. Aldewereld dated November 2, 1967. (Attached)

above, the major policy aspects of concern to us in the context of our participation in irrigation development are:

(i) funding of projects;

(ii) operation and maintenance problems;

(iii) recovery of investment costs from beneficiaries;

(iv) project organization and administration;

(v) procurement; and

(vi) use of expatriate consultants for planning and project preparation.

In addition, there is, of course, the problem of maintaining appropriate incentives to producers to ensure full utilization of the facilities to be provided, involving pricing and market policies and the availability of credit.

22. Funding of Projects: Execution of irrigation projects has in the past been hampered by inadequate local currency funding of projects under way. The recent emphasis on completion of on-going projects is thus a step in the right direction. To help ensure prompt utilization of irrigation facilities, initial funding should provide for the minor, as well as the major, structures, since farmers are often not able to organize and carry out extensive field channelling. Many of the problems in this area are the result of the complex relations between Center and State. 1/

23. Operation and Maintenance Problems: The operation of existing irrigation projects tends to be oriented towards the water requirements of cropping patterns of low intensity. With supplementary development, operational procedures should be reviewed, and if possible adjusted, to provide for effective water control rather than drought insurance. Similarly, many systems appear to suffer from deferred maintenance often due to inadequate budget allocations. In some cases this may make complete overhaul of irrigation systems necessary. Unless adequate provisions for regular maintenance can be assured there is little point in initiating new projects.

24. Recovery of Investment Costs from Beneficiaries: There is a tendency to subsidize producers via low water charges. With improved terms of trade for agriculture and increasing productivity, there is less

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1/ See memorandum from Mr. W.A. Wapenhans to Files, dated March 25, 1968. (Attached)

justification for such a policy, except for very small holdings capable of producing little more than subsistence requirements, particularly in the absence of significant action on taxation in the agricultural sector. 1/ In view of the increasing burden on public funds, because of irrigation development and maintenance expenditures, it is essential to require ultimate beneficiaries to contribute to the recovery of capital invested as well as to cover operation and maintenance expenditures.

25. Project Organization and Administration: The effectiveness of the organizational and administrative arrangements made for the construction and operation of irrigation works has been found to vary considerably from one State to another and from one type of project to another. Overall, little consideration is given to the agricultural aspects when devising and staffing a project organization, and the institutional division already referred to usually continues into the operational phases of irrigation projects. For our future involvement in irrigation development, it would be essential that clear and concentrated responsibilities be assigned for each project.

26. Procurement: You have been provided with a separate brief on procurement, which has been the subject of intensive discussion during recent months. It is the present policy for all procurement from abroad to be channelled through State and Center authorities for review and approval, and little responsibility is delegated to the authorities directly executing a project. In the process, specifications may be changed and considerable delays are generally incurred.

27. Use of Expatriate Consultants: Indian authorities, especially those dealing with irrigation, have consistently objected to the employment of expatriate consultants. This has contributed to the fact that the attempt to solve today's problems with pre-war technology and planning concepts is still frequently made. If the approach outlined in para.19 above is to be followed, it will be essential that expatriate expertise is brought to bear upon the immense planning job. For there is only limited Indian expertise in integrated river basin development planning embracing both ground and surface water, and many of the planning activities are extra-curricular to the functions of existing institutions, and might strain their capacities.

1/ During the past decade the contribution of land revenue to State revenues has fallen from 25% to 7%. While agricultural income increased by 50% between 1960 and 1966, land revenues increased by only 21%; see Stanley Please, Aspects of Agricultural Tax Policies in India and Pakistan, IBRD, November, 1968.

Agriculture Projects Department
November 5, 1968

Priorities for Completion of Major On-going Irrigation Projects

Project (State)	River	Date of Start	Est. Cost (Rs.mil)	Already spent (Rs.mil)	Irrigation Potential (000 acres)	Remarks
Pochampad (Andhra Pradesh)	Godavari	1963	401	80	570	Work on the dam is about half complete. The canal is only 17% complete.
Upper Krishna - I (Mysore)	Krishna	1964	582	21	600	Very little work has been undertaken. Stage II would extend the irrigation potential to 1.2 million acres.
Bhima (Maharastra)	Pawna and Bhima	1964	426	26	469	Two dams, one of which nearly completed.
Jayakwadi (Maharastra)	Godavari	1964	385	52	350	Work on the dam is about half complete.
Broach (Gujarat)	Narmada	1959	414	57	962	Project scope under review.
Mahi-Banswara (Rajasthan)	Mahi	-	290	-	72	Multi-purpose. Joint project with Gujarat.
Mahi-Kadana (Gujarat)	Mahi	1956 (prel.)	163	9	220	Project would also firm up water supplies.
Tawa (Madhya Pradesh)	Tawa	1962	341	58	750	Work on dam and canals started.
argi (Madhya Pradesh)	Narmada	-	670	-	70	Multi-purpose (70MW)

Source: Ministry of Irrigation and Power, New Delhi
(K.S.S. Murthy's letter dated August 23, 1968)

TO: Mr. L.J.C. Evans and Mr. G. Votaw June 14, 1968

FROM: G. F. Darnell and R. Picciotto

SUBJECT: INDIA - Tarai Seeds Project
Fertilizer Financing

1. In connection with the appraisal of the above project we wish to recommend that IDA be prepared to consider financing of fertilizer imports both for the direct use of farmers who will be growing certified seed under the project and (provided a suitable project can be developed) for the farmers who will make use of that seed for growing foodgrains.

2. There are few problems on the production side of Tarai. Unusually favorable physical conditions, the large size of holdings, the enterprise of the local farmers and the technical competence of the Uttar Pradesh Agricultural University (UPAU) provide excellent conditions for productive farming. Indeed, the on-farm investments proposed under the project would pay their way even if quality seed production was not part of the project. However, there are few regions of India where the capital intensive pattern of agriculture proposed for Tarai would be appropriate. Rather than its direct production merits (which are substantial) the major contribution of the project to the economy as a whole would be its focus on a particularly crucial element of the Government's agricultural program -- seed.

3. The dwarf and hybrid seed varieties which the project would produce call for two to three times the fertilizer applications recommended for ordinary varieties. This means that unless adequate and timely amounts of chemical fertilizers (adequately supported by credit) are made available, the incentive of farmers to purchase the new seed varieties would be reduced. The following orders of magnitude illustrate the dimensions of the Tarai Seeds marketing task. By 1972/73 the project would produce some 50,000 tons of high yielding wheat, rice, maize, sorghum and millet seeds -- 23 per cent of the all-India draft Fourth Plan target for the High Yielding Varieties Program (HYVP). Taking account of the seed rates applicable to the varieties to be produced under the project, this implies an eventual end-use area for Tarai seed of approximately seven million acres. The related annual requirements for fertilizer would be about 0.7 million tons in terms of nutrients (worth US $140 million) representing about one-third of the current fertilizer utilization for India as a whole.

4. At the present time, the marketing of seed and fertilizer in India is largely the province of Government departments and cooperative agencies. There are exceptions to this pattern but they occur mostly in the South, i.e. outside UP, Punjab, Haryana and Rajasthan where most of the Tarai-produced seed is expected to be sold. In UP, fertilizer is distributed by the Provincial Cooperative Federation, the Cane Producers

Union Federation, and the Agricultural Supplies Organization (State Department of Agriculture). In Punjab (and almost to the same extent in Haryana) fertilizer distribution is handled exclusively by the Cooperative Marketing Federation. In Rajasthan, fertilizer distribution is equally shared by cooperatives and government departments. The shortcomings of these agencies are serious and too numerous to be listed here. Given these shortcomings, the Central Government has recognized that near-monopoly distribution by public agencies or cooperatives is inconsistent with the large increases in fertilizer supplies proposed for the next few years. However, some State Governments, notably Punjab, have been reluctant to allow manufacturers the freedom to make their own distribution arrangements. The same reluctance broadly applies to seed from which State agricultural departments (and sometimes their officials) now derive substantial income.

5. The use of high yielding foodgrains seed and fertilizer requires additional direct on-farm expenditures of about Rs.200 - 300 (US $25 - 40) per acre. This is a significant financial burden for the bulk of Indian farmers. Up to now, because inputs were scarce and product prices favorable, production credit has not been limiting to the expansion of the new foodgrains technology. Progressive farmers have been willing to pay cash for the new seeds and the UPAU has been able to sell its entire seed output at good prices with minimal promotional activity. However, as seed production picks up and HYVP begins to reach beyond an upper layer of prosperous farmers, credit is bound to limit modern input use unless expanded credit facilities are made available through appropriate channels. For fertilizer alone, the Fertilizer Association of India estimates that annual production credit amounting to US$210 million will need to be provided in Northern India by 1970/71, and that less than half of this amount could be handled effectively by traditional cooperative channels.

6. In view of the above, the project might run into marketing problems well before project maturity unless:

(a) appropriate links between seed and fertilizer distribution are forged;

(b) adequate supporting credit arrangements are implemented (taking cognizance of an expected pattern of seed and fertilizer distribution in which manufacturers and private dealers will play a greater role); and

(c) adequate quantities of chemical fertilizer are made available for distribution through appropriate channels in North India.

7. With respect to (a), it is proposed that the Tarai Development Corporation (TDC) 1/ make its own arrangements for seed marketing. To

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1/ TDC, a newly formed corporate body of the seed-producing farmers, UPAU and others, would process and market the seed produced under the project.

facilitate such arrangements, IDA has encouraged an association between TDC and Indian Explosives Ltd. (IEL), a fertilizer company of the ICI-India group in which IFC holds shares. Discussions about this association (which might involve a ten percent contribution by IEL to the share capital of TDC) are now underway. By 1972/73, IEL's area plant located at Kanpur (UP) is expected to market about 180,000 tons of N. This is about two-thirds of the requirements associated with Tarai-produced seed in that year. An IEL-TDC partnership would therefore greatly strengthen the marketing programs of both organizations and we would therefore recommend that such a partnership be a condition of IDA lending for the Tarai project. In due course, suitable working arrangements between TDC and other fertilizer manufacturers might be framed to further promote effective seed marketing.

8. With respect to (b), IDA should obtain an assurance from the Government that it would undertake to meet the credit requirements for seed and fertilizer distribution including the requirements of commercial channels.

9. With respect to (c), it should be pointed out that, given the present shortage of fertilizer in India the full economic impact of the project would be realized only if the fertilizer supplied under the project is additional to existing supplies. Since India's fertilizer production capacity is not expected to match domestic requirements for at least five years, additional fertilizer supplies means additional imports (Annex 1). Given India's tight foreign exchange situation, these additional imports would require external financing, over those same five years.

10. IDA financing of fertilizer for the project could therefore be justified on two project grounds -- to assist the Government of India in providing the necessary credit for seed and fertilizer distribution (para. 8) and to allow the additional imports (para. 9). While India's external financing requirements for fertilizer are now covered in large part through bilateral aid programs, they are pledged within the Consortium framework only on an annual basis. Furthermore, the amounts of fertilizer required are small compared to estimated import requirements, at least for the next four years (orders of magnitude only):

	1968/69	1969/70	1970/71	1971/72	1972/73	Total
			(US $ Million)			
Project Needs 1/	0	16	31	46	76	169.0
All-India import requirements	310	335	335	282	205	1,467.0

1/ Gross needs of farmers planting with high yielding seed, less amounts of fertilizer assumed to be already in regular use.

Subject to satisfaction on a number of points (which are spelled out in para. 11 onwards) we would therefore recommend that IDA consider financing fertilizer imports of the following orders of magnitude, a small percentage of import requirements:

	1968/69	1969/70	1970/71	1971/72	1972/73	Total
			(US $ Million)			
For seed-producing farmers:	0.4	0.8	0.8	1.0	1.0	4.0
For end-users of project seed:	-	15.0	30.0	30.0	25.0	100.0
Total:	0.4	15.8	30.8	31.0	26.0	104.0

The US $4 million proposed for seed-producing farmers would be part of the credit under active consideration, and for which the appraisal report is under preparation. The remaining US $100 million (order of magnitude only) would be the subject of another credit following further preparation and appraisal. It would be a condition of lending that the rupee funds generated by IDA financing of fertilizer be used for meeting other agricultural credit needs, in particular those arising from the project itself.

11. The proposed US $100 million credit would entail further staff activity. As a first step, we would recommend that a mission be sent to India in the fall to review the marketing and distribution of seed and fertilizer in North India and to investigate other restraints on the end-users (such as, for example, water). This mission might well point up the need for a more detailed investment-oriented study of the needs of those end-users, the cost of which could be included under either credit.

12. Substantial fertilizer financing by IDA would only be justified, of course, if IDA was satisfied that India was making sufficient effort to make full use of existing fertilizer capacity and to expand such capacity; that, during any period of such financing, domestic requirements did, in fact, substantially exceed production capacity and that alternative sources of suitable external finance to fill the gap between domestic supply and requirements remain uncertain. Any credit for fertilizer imports would, therefore, have to be subject to fairly frequent review.

13. We would be grateful for your views on these recommendations prior to further discussion in working party.

cc: Messrs. Chadenet, Bell, Wapenhans, Pickering, Eccles, Courbois (Rome), Bartsch, Dunn, Gilmartin/Bohr (Delhi Office), J. David Dodd (IFC)

RPicciotto/SEccles:gz

India's Fertilizer Import Requirements[1/]

1. The target fertilizer consumption figures set by the Sivaraman Committee in 1965 have official status. They are generally considered as representing minimum requirements for the sectoral growth targets proposed by the Government (implying foodgrains self-sufficiency in the early seventies). The Committee's consumption projections beyond 1970/71 are only "reasonable goals." Considerable improvements in water management were assumed in setting these goals and a great deal of effort will be required to meet them even if the supply of fertilizer is assured.

2. Nitrogenous fertilizers are by far the most important, in terms of quantity and cost, and a chart is attached showing a projection of possible domestic production against the Sivaraman Committee consumption projections. The chart assumes that plant production never exceeds 90 percent of installed capacity, that new plants take two years to come into production after the start of construction, and that production is 50 percent of capacity in the first year, 75 percent in the second year and 90 percent thereafter. The production forecast from plants already in existence, under construction, or whose construction might start in 1968/69 is Mr. Bohr's. In order to make a projection of the future contribution from extensions and plants under active consideration not falling within the above three categories, it has been assumed that construction of one-half of that capacity would begin in 1969/70, with the other half a year behind. Clearly, some of these plans will be delayed or abandoned and others might or might not take their place. On the other hand, the consumption forecast is also dependent on many imponderables. So that our production assumption may serve as a tentative guide to the future trend towards self-sufficiency in nitrogen production. The chart indicates that domestic production could be sufficient to meet requirements for nitrogenous fertilizers by 1973/74.

3. The situation with regard to phosphates is not as hopeful since total productive capacity is not expected to reach above 1.6 million tons of P_2O_5 equivalent prior to 1975/76 even if all plants under active consideration materialize. Consumption at that time might be expected to have reached around 2.0 million tons equivalent.

4. All potassic fertilizer requirements have to be imported.

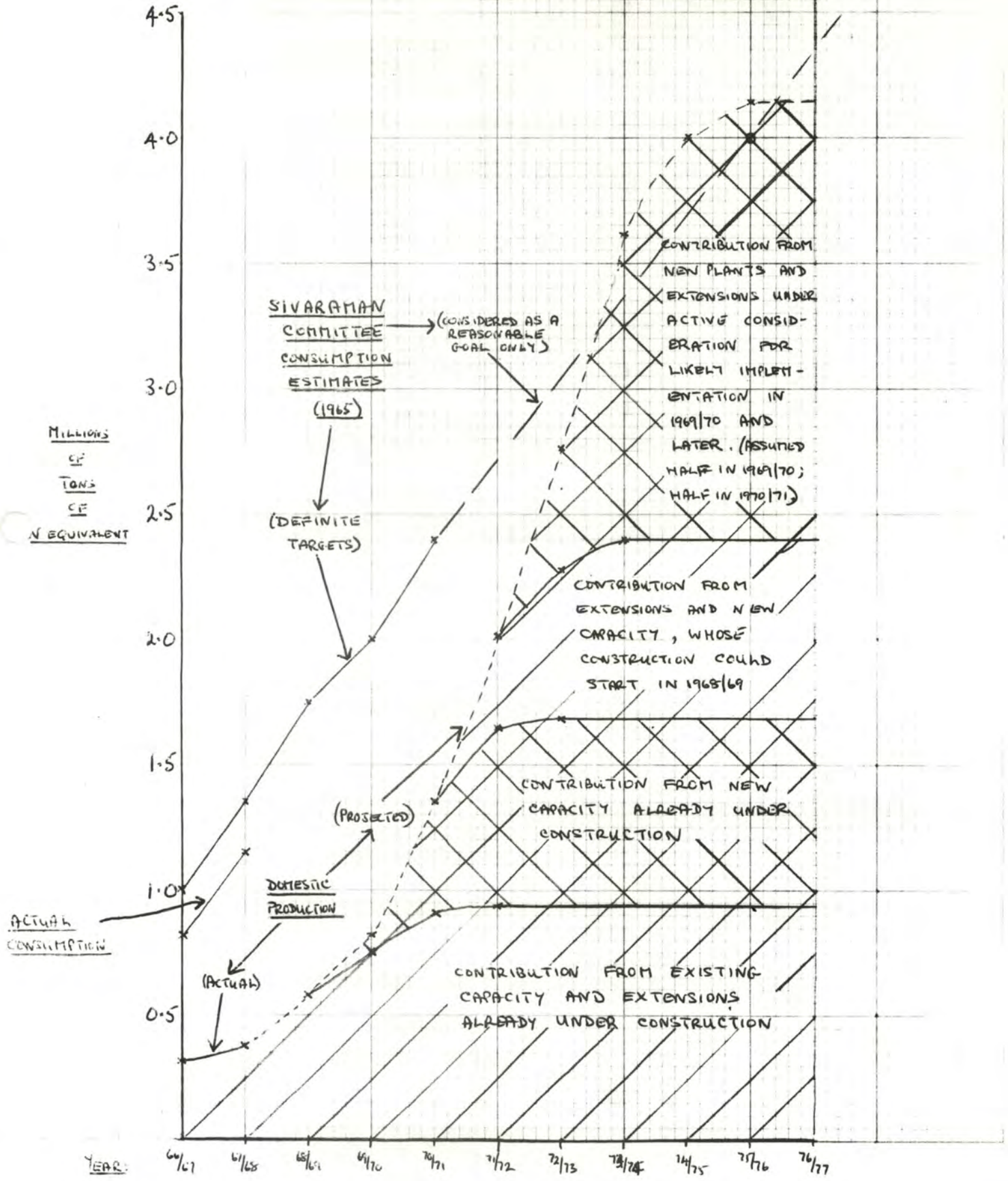
5. On the basis of the above assumptions, India's fertilizer import requirements are projected as follows:

1/ Principal sources for this Annex are:
(i) Notes by Mr. Kenneth A. Bohr, as attached to his letter of April 3, 1968, addressed to Mr. Votaw; (ii) "Report on the Fertilizer Industry in India", IFC/T-27, of May 6, 1968, prepared by Mr. J. David Dodd with assistance from Mr. Bohr and other members of the Bank's Resident Mission in India; (iii) Memorandum to files dated April 30, 1968, by Mr. Bong S. Lee.

	N		P_2O_5		K_2O		Total	
	'000 MT	$ Mill.	'000 MT	$ Mill.	'000 MT	$ Mill.	'000 MT	$ Mill.
1968/69	1,150	230	350	50	450	30	1,950	310
1969/70	1,200	240	440	60	550	35	2,190	335
1970/71	1,050	210	590	80	700	45	2,340	335
1971/72	700	140	665	90	800	52	2,165	282
1972/73	300	60	600	85	900	60	1,800	205

INDIA – TARAI SEEDS PROJECT

CONSUMPTION / DOMESTIC PRODUCTION OF NITROGENOUS FERTILIZER



FORM NO. 57 | INTERNATIONAL DEVELOPMENT ASSOCIATION | INTERNATIONAL BANK FOR RECONSTRUCTION AND DEVELOPMENT | INTERNATIONAL FINANCE CORPORATION

OFFICE MEMORANDUM

TO: Files

DATE: March 25, 1968

FROM: W. A. Wapenhans

SUBJECT: INDIA - Lending for Agriculture

1. Further to my notes to Files on specific projects and activities, I am setting out below a few more general observations regarding future Bank/IDA lending for agriculture to India. These were developed during a mission to India from January 30 to February 15, 1968.

2. To introduce the theme of this memo I will repeat a few of the pertinent statistics. India has a population of over 510 million people. Its cropped area is about 400 million acres of which nearly two-thirds are under foodgrains. The agricultural sector produces roughly 50 percent of the national income. In spite of these enormous magnitudes, their problems and opportunities, our involvement and acquaintance with Indian agriculture has been less intimate than that with many other countries of less than one-tenth its size.

Past Experience and Present Relations

3. Bank and IDA lending for Indian agriculture in the past has been predominantly for capital intensive major irrigation works, because it has been projects of this type that India proposed to the Bank. IDA financing since 1961 supported five irrigation projects and one drainage project. These involved relations with the respective Ministries of Irrigation at the Center and State levels, but very little with the Ministries of Agriculture and other agencies directly concerned with production. Practically no experience has been gained in lending for Indian agriculture proper and hence our relations with the agricultural authorities have been only slight. This is unfortunate especially because of the rather rigid compartmentalization within the Indian administration, which at times results in the setting of priorities for development not necessarily complementary to each other. The comprehensive approach long advocated by the Bank is now being given increasing emphasis by agricultural authorities. However, more could be done to ensure adequate integration of the various activities at the grassroots level especially in the case of major irrigation schemes with divided responsibilities.

4. For the Bank to be of assistance in this area, the dialogue on project concepts and designs would need to start at a very early stage, i.e. perhaps two to three years before a project ready for financing would emerge. It would also require close and continuing contacts between the Indian authorities responsible for such project preparation at the Center and State levels and the Bank's technical staff. A frank and constructive dialogue depends on mutual understanding and confidence which can only be built up by better acquaintance with the system, its problems, and the personalities who operate it, and by the Indian officials learning more about our intentions, procedures and concepts.

5. The Terai Seeds project and the Punjab Drainage Project and Agricultural Study already offer an opportunity to intensify our relations with

Indian agricultural authorities. However, this should be regarded only as a first step. A continuous exchange on future projects and programs should follow, which in turn would increase the prospects of a pipeline of soundly conceived projects.

6. The latter in turn requires that the agricultural authorities (State and Federal) are given some incentives to take an active part in such project preparation. Repeatedly I was given to understand that IDA finance for agricultural projects would not necessarily increase the total allocation of resources to agriculture either at the Center or at the State level. This results from an intricate planning mechanism under which external financing is anticipated and possibly allocated in accordance with criteria for priorities inherent in the system. Since most projects in the field of agriculture require little foreign exchange IDA finance may thus be in substitution of budget allocations rather than incremental. Rejection of a project for external support on technical grounds can thus have serious budgetary consequences for a particular State budget. Since this is recognized, there is in the mind of the Indian agricultural administrator little purpose in going through the rigors of project preparation for IDA financing when the same amount of resources can be obtained with less effort and uncertainty. I suspect this applies generally especially if non-project financing can be had in the absence of suitable projects ready for financing.

7. Consideration might therefore be given to the introduction of a system by which a given sum of IDA finance would be made available only for soundly conceived projects in the field of agriculture and irrigation. It would need to be made clear that these resources would otherwise not be available and would thus not substitute those allocated at any rate in the States' annual development budgets. The allocation of these funds should then be strictly in accordance with project criteria and irrespective of the concept of equality amongst States. This might lead to a constructive competition amongst States for incremental resources for the development of agriculture. Since these funds would not otherwise be available and since they could simultaneously provide free foreign exchange for the Central Government this should result in a rather powerful incentive to prepare acceptable projects and to seek help in such preparation. Such an approach would not necessarily improve the quality of project preparation across the board and might initially even lead to a concentration on a few promising prospects. There should be, nevertheless, a considerable demonstration effect in the long run.

Current Input Financing

8. Foreign exchange requirements in agriculture proper, as distinct from irrigation works, occur at present mainly in regard to current inputs. Our unwillingness to finance a rather large fertilizer import program in conjunction with the UP Tubewell project has caused some consternation and resentment with the Central Ministry of Agriculture. Their argument is that a much better utilization of already developed land and water resources can be obtained at low costs through the incremental provision of current inputs, especially fertilizer. In view of the absolute scarcity of fertilizers this argument is not without merit. The counter-argument that the economy ought to devise mechanisms for priority allocations of such scarce current inputs does not appear very persuasive to the Indian administrator who is charged with the responsibility for immediate increases in food production.

9. The case could be made that the provisions for fertilizer imports closely resembles commodity imports for better utilization of industrial capacities. Where adequate irrigation supplies are available the provision of extra current inputs would undoubtedly improve the efficiency of such resource use. The resulting output is bound to relieve import requirements in value terms perhaps many times that of the foreign exchange spent on fertilizers. Increasingly the provision of such inputs should come from local manufacture and any interim financing of fertilizer imports should probably be made contingent upon the establishment of such production facilities.

10. The criteria for the financing of fertilizer imports would thus appear to be:

i) that it be in anticipation of local manufacture for which it would prepare the market;

ii) that appropriate priority distribution in accordance with the concept of efficient resource utilization would be ensured;

iii) that such support would be made available only on the evidence that the country is making adequate provision for fertilizer supplies from its own as well as third party resources.

Such input financing should preferably be done in the context of agricultural projects suitable for external assistance and then only on the basis of an acceptable fertilizer supply program for the entire sector.

Future Lending Prospects

11. An attempt was made to discuss future projects and programs with the Central Ministry of Agriculture. However, the Secretary of Agriculture and his deputy were initially not willing to discuss any of their future plans beyond Terai Seeds and the Agricultural Study in connection with the Punjab Drainage project. In my opinion this attitude was mainly conditioned by inadequate preparation on the Indian side, a desire to ration information and, in their minds, our lack of understanding for current input financing. The atmosphere improved somewhat at the end of my stay in India. Arising out of their interest in work done by the Bank elsewhere, it was possible to develop a preliminary exchange on river basin development programming and the need for integrated development and use of surface and groundwater. The desirability of a more intensive dialogue between the Indian agricultural authorities and their counterparts in the Bank became apparent in the course of these discussions.

12. The contacts at the State level (Mysore and Madràs) were less inhibited. There is, nevertheless, a lack of understanding for our emphasis on the project approach, mainly because of the reasons given in para. 6 above. In vogue are the so-called "Intensive Agricultural District Programs "(IADP) and more recently the "Intensive Agricultural Area Programs" (IAP). These consist mainly of the provision of current inputs such as fertilizers and quality seeds at rations higher than usual. The programs are frequently formulated around some previous irrigation development and once accepted by the Central Government receive Center support. The results are not always convincing and the reason may well be the lack

of coordination between such activities as double cropping, irrigation operations, water management, on-farm development, drainage provision, etc., all required in addition to current inputs but several controlled by departments other than agriculture.

13. In their present form these programs would not appear to provide a suitable basis for lending to agriculture. They would need to be enlarged to encompass the aspects mentioned above. In particular the irrigation operations would need to be revised to meet the needs of the cultivators for increasing double cropping and more intensive current input applications. Unless this is done there is the danger that such intensive area programs just substitute for the deterioration of such basic resources as irrigation supplies. In this context it may be worth mentioning that there appear to be substantial opportunities for groundwater development within existing surface irrigation systems. This in turn would require careful planning with regard to the rural electrification programs and the integrated operation of such combined resource development (see also my note to Files on the groundwater study in Tanjore, Madras).

14. Discussions were also held with the Secretary of Food, Central Ministry of Agriculture. His staff is presently thinking of a gradual relaxation of the food zoning policy. This may result in substantial changes in inter-State grain flow patterns. In turn, this is likely to result in increased storage requirements with future capacities so located as to enable the maintenance of strategic reserves mainly from local production and their use for price stabilization. The Secretary of Food in conjunction with the Food Corporation of India is presently revising his plans for the increase and location of grain storage capacities. He promised to make his revised plans available to our Resident Mission as soon as they become available.

15. The future program of major irrigation development was discussed with the Secretary of Irrigation, Central Government. The present plan includes some 63 major irrigation projects of which 17 are nearing completion. Because of shortage of rupee funds it became necessary to concentrate on 8 of these 17 projects on which preliminary discussions had taken place on previous occasion. Most of these are more than 70 percent complete and offer very little prospect for a useful contribution from IDA.

16. In the past the divergence of views between Indian irrigation officials and the Bank was mainly in relation to design aspects, such as intensive vs. extensive cropping patterns. While there appears to be a less rigid attitude on this aspect on the Indian side, there is the danger that the traditional concept of extensive irrigation system designs will perpetuate itself unless continuous influence is brought to bear on those responsible. We have already commented on the need to employ consultants for project preparation and implementation on previous occasions (see Mr. Evans' memo to Mr. Chadenet of September 20, 1967). To make this acceptable is, in my opinion, again not only a question of insistence but also of our continued presence. The new element of possible integrated surface and groundwater use in the case of irrigation projects might make the Indian engineers more accessible to outside expert advice. I see a considerable opportunity here to help in the planning and preparation of

major irrigation projects which are still in their infant stages. Because of the groundwater element the acceptability of outside consultants should no longer be excluded; but steady persistence will be required to bring this about. Again this would require a continuous dialogue between the Indian irrigation authorities and the Bank's technical staff. A first step in this exchange should be a reconnaissance mission to India which would concentrate on those major irrigation projects where the design is yet preliminary and where there is a good chance of integrated exploitation of surface and groundwater. Such a mission could usefully visit India in early fall of this year. It should not be expected that there would be immediate lending prospects. However, this could be the beginning of building up a continuous pipeline of soundly conceived projects. A conducive working atmosphere at the State level should not be overlooked in the selection of such projects, especially if the approach set out in para. 6 above is found to be acceptable. If in the long run, the level of disbursements for projects is expected to substitute also largely for those of import financing the early concentration on such a pipeline would seem of high priority.

Conclusions

17. In summary the above leads to the following conclusions:

i) Our dialogue with Indian authorities responsible for agriculture and irrigation should be intensified and additional emphasis should be given to our contacts at State levels;

ii) A system should be conceived which would make it attractive for Indian officials to engage actively in and seek help for project preparation which would eventually lead to an acceptable balance of non-project and project financing;

iii) Financing of current inputs especially fertilizers should be given consideration, provided this would be in support of the country's own efforts in this field and adequate priority allocations can be assured;

iv) In future project preparation in agriculture emphasis should be given to the comprehensive planning and execution of such projects including review and, if necessary, revision of traditional patterns of irrigation systems operations, maintenance, drainage and groundwater development;

v) The development of changes in food zoning policies and the possibilities of revisions and increases in grain storage capacities should continue to be watched;

vi) Possibilities for improved planning and preparation of major irrigation projects with the possible help of outside consultants should be followed up with an early irrigation reconnaissance mission.

Unless these steps are taken I see little prospects for expanded lending for agriculture to India.

18. The agricultural staff of the Resident Mission in Delhi has made a very encouraging start in familiarizing themselves with project prospects in various States. It would be unrealistic, however, to expect a contingent of two staff to devote, in addition to their other duties, sufficient time to project identification and help in preparation. Substantially more headquarters support is required. More frequent missions of agricultural staff to India would strengthen their efforts as well as support those in the Indian administration who are prepared to work with us. The FAO/IBRD Cooperative Program could also play a useful role in this effort. There are, however, some tendencies to play FAO against the Bank and vice versa. It is, therefore, essential that the Bank retain the lead in the dialogue and ask FAO help for the specific follow-up activities in the sphere of project preparation.

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