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Agricultural Assistance Strategy: India

by

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Agricultural Assistance Strategy: India*

Wayne A. Schutjer**

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Introduction

In the period 1952-1969 U. S. AID provided more than 128 million dollars in technical and capital assistance to India in support of agriculturally related programs. The purpose of this paper is to review the strategy underlying U. S. agricultural assistance to India and to see what lessons can be drawn for future programs.¹

The major conclusion that emerges from the review is that the Government of India (G. O. I.) and AID agricultural strategies have been in large part reactions to crisis situations, although the University development program and related technical assistance activities provide a strong thread of continuance throughout the total period. In short, the drought of 1958/59 led to the creation of the Intensive Agricultural Districts Program (IADP) and the drought of 1965/66 to the High Yielding Varieties (HYV) program. In the 1970's agricultural strategy for India will be shaped primarily by the social and economic forces generated by the selectivity of the HYV program.

The text of the paper attempts to abstract from details and side issues and to concentrate on the main elements of U. S. and G. O. I. agricultural

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¹ The international lending agencies and other non-communist donor countries have participated in the activities of the Indian Consortium--thus, although IBRD lending activity has been included in the assistance data--it has not been necessary to review this activity in detail.

strategy. In keeping with this philosophy extensive use has been made of footnotes for elaboration of specific points and for noting where the reader can obtain more detail on a given point. Also, in keeping with the need for a direct style, the detail of the foreign assistance programs and projects have been included in an Appendix.

The primary source of data for the review were AID program documents (including loan papers) and related documents such as cables and issues papers. In addition, the World Bank Reports and Indian documents provide a wealth of information. A brief annotated bibliography is appended.

The Early Period: 1951-1960

AID (or TCM) went to India with an agricultural program in 1952. At that time the essential concern of India was nation building, to be accomplished through creating broad participation in the economic and political life of the nation. Thus, economic policy and agricultural policy were subject to that overall constraint.

The constraint imposed by national policy concerns was, however, largely inoperative as regards agricultural development policy. The primary reason being a belief prevalent among decision makers that adequate agricultural technology was available to support increased agricultural production and productivity (18, p. 60). Therefore, the task facing those concerned with developing Indian agriculture was to create an environment conducive to the adoption of the relevant technology. Agricultural programs, thus, were aimed at creating an awareness among the rural population as to the production possibilities and providing greater access to the factors of production through both increased supply and a more equal distribution of current supplies.²

²The flavor of Indian agricultural policy and AID's efforts to assist in its development and implementation are based primarily on conversations with Frank Parker and material contained in (18).

The First Five Year Plan (1951-1956) was dominated by the Community Development Program which reflected India's overriding concern with nation building and equity--but which was consistent with the task of creating an environment conducive to the adoption of new technology.³ The same focus prevailed in each of the other major elements of the early agricultural programs of India, i.e. land reform, irrigation, and credit.⁴ In general these programs did not attack the agricultural output problem directly but rather focused on output stability and equity considerations felt to be necessary to create an environment conducive to the adoption of agricultural technology, and thus, round-about solutions to the food problem.

The early AID program in agriculture was well integrated with the Indian agricultural programs but was in general more production oriented.⁵ Thus, while providing a considerable amount of technical assistance and equipment to the Community Development Program a strong parallel movement was directed at aiding the Indians in improving the effective use of fertilizer and at creating a strong agricultural institutional system.⁶

³In 1952 a Grow More Food Enquiry Committee concluded that all aspects of rural life were interrelated--their views and recommendations led the Government of India to establish a National Extension Service and a new unit of development administration known as the Community Development Block (20, p. 17).

⁴An excellent discussion of India's experimentation with land reform is available in (13). In that paper the author notes that the effects of land reform on production were probably positive but difficult to specify as the land reform measures which redistributed area (i.e., changed farm size) were late in coming and slow in implementation (13, p. 68).

⁵Frank Parker notes that as Agricultural Officer he maintained an office in the Indian Ministry of Agriculture in the early 1950's.

⁶In 1952/53 AID provided 40-50 vocational agricultural teachers and county extension officers to the Community Development Program and related activities.

The production oriented program included technical assistance in live-stock, grain storage, soil conservation, and fertilizer-related activities. However, the efforts to increase the use and production of fertilizer appear to have represented the major production oriented thrust of that period. These efforts included technical assistance for the establishment of soil testing labs, fertilizer bag and storage trials, crop response trials, and encouragement and technical assistance for establishment of the Fertilizer Association of India.⁷

The development of the Indian Agricultural University System is perhaps one of the best documented AID success stories.⁸ What is essential for this review is that AID building upon a strong Indian education ethic was instrumental in the creation of a Joint Indo-American review team.⁹ The joint team made a comparative study of U. S. and Indian agricultural research and teaching institutions and made a series of recommendations which ". . . laid the foundation for all of the subsequent developments in India leading to the establishment of Agricultural Universities and enhancing the value of research work in agricultural sciences in India" (20, p. 19).

By 1957/58 it was becoming clear that whatever the success of the Community Development Program and related equity programs with regard to nation building--a new approach would be required if the desired levels of

⁷Detailed data regarding the technical assistance and other lending activities of this and each of the subsequent periods is contained in Appendix A.

⁸The history of the Indian Agricultural University and the role played by AID and the Rockefeller Foundation in its development is both complex and fascinating. The development has, however, been well documented and will not be reviewed in detail. See (20) and (7).

⁹The importance attached to education by the G. O. I. can be seen in the establishment in 1948 of the Indian University Education Commission to review University education and make suggestions for its improvement.

agricultural production were to be reached.¹⁰ Thus, with agricultural production at 62 million tons (7 million below the 1952/53 level) India faced its first post-AID food grain crisis, and as a result, as will be seen below, there were substantial shifts in Indian and AID agricultural development strategies. However, it is clear, that AID through its two pronged production-institution building approach had contributed to laying the foundations for future agricultural successes in India.

The Intensive Agricultural Districts Program: 1960-1965

In response to the food grain crisis of 1959, the Ford Foundation financed a team of experts to review the food situation and to make recommendations for improving the food supply of India.¹¹

The team suggested that food grain production be given top priority and suggested a series of proposals for increasing food grain production.¹² The proposals included measures to intensify the use of fertilizer and credit with greater attention to be given to land reform measures and agricultural price policy. However, the proposal which received the most attention and had the greatest impact on agricultural development policy was the suggestion that certain crops and certain areas should be selected for more intensive efforts.

¹⁰The First Five Year Plan was judged as an agricultural success and the second plan initiated in 1956 was primarily an elaboration of the basic approach contained in the first plan. Prior to the drought year of 1957/58 there was little reason to doubt the strategy, as output continued to grow at about 2.5 percent a year.

¹¹The Ford Foundation sponsored team worked in India during the period January 23-25, 1959 through April 4-7, 1959. The team, under the chairmanship of Sherman Johnson prepared a report entitled "India's Food Crisis and Steps to Meet It" (1).

¹²In contrast a IBRD mission review of the Third Plan Outline suggested too much attention was being given to expanding production of food grains and not enough to cash crops.

"The team recommends that those selected crops and those selected areas in each State should be chosen which have the greatest increase potentialities" (1, p. 5).

The report went on to suggest that wheat and rice be given primary attention--rice in 25 important growing districts and wheat in selected districts of the Punjab, U. P., M. P. and Bihar. The team report noted that in their view, concentration in those areas would:

" . . . increase India's food production more rapidly than others, if given allocation of fertilizers in combination with other improved practices, such as plant protection measures, improved seeds, and water for irrigation. Attention to other areas should not be reduced. But, in the national interest, the team believes that increased effort should be immediately directed to the most responsive areas" (1, p. 5).

On the basis of the review team recommendation for a package approach in selected areas, the Ford Foundation in 1960 appropriated \$10.5 million to assist the G. O. I., over a five year period, in the implementation of the Intensive Agricultural Districts Program (IADP) (6, p. 3).

The impact of the Ford Foundation team report can be noted in subsequent G. O. I. and AID strategy documents.¹³ The third Indian Five Year Plan, prepared at the turn of the decade, placed considerable emphasis on the importance of agriculture, and suggested that during the preparation of the report, " . . . the guiding consideration has been that the agricultural effort should not be impeded in any manner for want of financial or other resources" (15, p. 68).

¹³ It is always difficult to trace the origin of a new idea or concept--this is especially true in the case of visiting foreign experts whose primary source of knowledge is people working in the host country. Thus, in all probability the concepts underlying the IADP represent a composite of the views of Indian Government officials, AID personnel, and the members of the visiting team.

In the budget allocations of the third plan, the Community Development Program continued to receive the majority of the agricultural development funds. However, in discussing their agricultural production program the drafters of the plan again noted the importance of achieving broad participation in production programs--but went on to state: "Specifically intensive development work will be undertaken in 15 districts which have been selected because of their favorable condition" (15, p. 70). Thus, a production primacy philosophy began to emerge in sharp contrast to the equity orientation of the Community Development Program and other early agricultural development efforts.

Early evidence of United States support for the concepts outlined in the Ford Report is found in the FY 1961 Technical Cooperation Program Book prepared in February of 1960. For FY 1961 the AID mission proposed a new program in agricultural extension that was designed to ". . . demonstrate how the coordinated efforts of a team of specialists backed by adequate resources can significantly increase agricultural production" (2).

Under the program extension teams were to be stationed in several States to provide both information and advice on fertilizer requirements and use, crop improvement, soil and water conservation, and farm irrigation and drainage. In addition, the teams were to be instructed to work on specific problems in limited geographic areas. In short, the proposed program reflected both the package approach and the selective concentration outlined in the Ford Report.

The FY 1963 Program Book prepared in March of 1962 contains a declaration of the missions intent to work within the framework of the Third Five Year Plan and a specific reference to the IADP. Thus, the report notes the importance of placing primary emphasis on food grain production and suggests

that " . . . the most significant program in stimulating food production is the Intensive Agricultural District Program being conducted in collaboration with the Ford Foundation" (3).

During the period 1960-65 AID continued to develop programs began in the 1950's. For example, it is during this period that the University Development Program took hold and expanded rapidly.¹⁴ Work with fertilizer, marketing, and soil conservation also continued to expand and contribute to building a solid base for future development efforts. Recognizing the importance of plant material to increasing yields AID also supported and encouraged the establishment of seed production farms and a seed certification service.¹⁵ In the area of price policy AID and the World Bank encouraged the development of a positive policy with price floors to be announced prior to planting.

The failings of the IADP have been well documented and discussed.¹⁶ With hindsight it appears that perhaps a crucial, if not "the" crucial problem was the lack of plant material capable of generating adequate returns to the intensive use of inputs and management. Thus, with the drought of

¹⁴The second joint Indo-American team submitted their report on July 11, 1960. See (8) for a review of its recommendations. Soon after the report of the second team was available a high level committee of the Indian Council of Agricultural Research made a review of the reports of both the Joint Teams and made suggestions for University organization, and in 1963 the Agricultural Research Review team was appointed (20, p. 22).

¹⁵In 1960 the Vice-President of the Indian Council of Agricultural Research appointed a committee to draw up plans for a seed-producing system. The role of AID and the Rockefeller Foundation in the subsequent development of India's seed industry is well documented. See (7, pp. 71-77).

¹⁶For an excellent discussion of the successes and failures of the IADP see (18, pp. 82-87).

1965/66 India suffered its second post AID food crisis and once again a new approach to the problem of food production emerged. However, it is important to note that as was the case in the period 1951-1959 AID programs of technical assistance and participant training continued to contribute to the development of agricultural infrastructure both human and physical.

The New Agricultural Strategy: 1966-1970

By 1965/66 it was clear that a new approach would be required if India was to overcome its food problem. Food grain production stood at 72 million tons, a level roughly equivalent to the 1958/59 level. In addition there was a growing dissatisfaction with the agricultural accomplishments of the Third Plan. The memorandum on the Fourth Five Year Plan sums up the G. O. I. position at the time:

"The Third Plan accorded the first priority to increase in agricultural production. It also provided for resources, material and financial, for agricultural development which, it thought, would make it possible to achieve a high rate of growth. These expectations have not been fulfilled . . . To an extent the shortfalls may be traced to the fact that progress in physical terms in irrigation, soil conservation and other programs than the Plan had envisaged. It is also true that the supply of material inputs, especially fertilizers, has been appreciably below the levels contemplated in the Plan. Unfavorable weather conditions, too, have played a large part. Nevertheless, the setback in agriculture since the end of the Second Plan is a cause of deep concern and has, in turn led to fresh considerations of the assumptions, methods and techniques as well as the machinery of planning and plan implementation in the field of agriculture" (15, p. 26).

With the encouragement and assistance of the United States and other agricultural advisors India undertook to develop a new approach to agricul-

tural development.¹⁷ The program which resulted was a combination of old and new programs which centered on " . . . the application of scientific techniques and knowledge of agricultural production at all stages."¹⁸

Under the new strategy emphasis was placed upon the introduction of improved varieties of wheat and rice developed in Mexico and Taiwan and a broader application of the improved varieties of maize and millets developed in India. The introduction of the new seeds was to be concentrated in the most promising areas and to be accompanied by policies to assure the availability of complementary inputs as well as policies to assure the profitability of the package.^{19, 20}

¹⁷ The extent of U. S. influence in initiating and shaping the "New Strategy" is debatable. Certainly the decision in 1965 that P. L. 480 agreements were to provide no more than three months' supply was designed to dramatize the significance of the food problem to the Indians and to create a situation where we would have more leverage on Indian Agricultural Policy. In addition, a review of the self help condition tied to the P. L. 480 agreements and program loans after 1964 as well as the timing of the loans themselves leave little doubt that a high degree of coordination was achieved between U. S. foreign assistance and Indian agricultural policy during this period. However, as Subramaniam argued . . . "We (Indians) have voice enough and we have intelligence enough to see what is in the best interest of the country. I do not think we are going to take any policy decisions through any pressure from any quarter, which is likely to be against the interest of the Country". From a speech in the Rajya Sabha on December 7, 1965.

¹⁸ From Lok Sabha Debates, December 7, 1965, p. 6078 as quoted in (10).

¹⁹ In the Freeman-Subramaniam agreement of November 1965 it was agreed that: " . . . 32 million acres of the most productive land farmed by the most efficient farmers will be designated for a crash production program with a target of 25 million tons of additional food grains by 1970 on this selected acreage" (11, p. 4).

²⁰ A periodic review of the profitability of the program and a reorientation of credit to a production rather than equity base were important aspects of the new strategy. However, as D. K. Desai points out, open market prices remained at a much higher level than the minimum support prices during the period 1964/65 to 1968/69 suggesting that government price policy had no positive effect on encouraging agricultural production (9, pp. 32-33).

The new strategy, thus represented a significant push in production using the package-intensive area approach coupled with new plant material. The significant feature of the new strategy was the strong production orientation which stood in sharp contrast to the equity orientation of the earlier programs and the limited production program represented by the IADP of the early 1960's.²¹

The combining of the Mexican wheats and Taiwan rice into the program reflects in large part the timely availability of these materials and a general recognition that the improved seed then available within India was often not as productive as that available from traditional sources. For example, Subramaniam argued before the Lok Sabha that there was ". . . no use trying (to increase yields) with our traditional varieties . . . even with the best of practices, with all the resources put in, the potentiality for yield of these traditional varieties is limited" (10, p. 694).

The United States centered its effort on (1) convincing the Indians to make a big push in agriculture, and (2) on assuring the availability of fertilizer. A continuing concern with price and credit policy prevailed, however, the primary emphasis of AID concerns were in national commitment to food grain self-sufficiency and fertilizer procurement. The Freeman-Subramaniam agreement committed India to double its investment in agriculture during the Fourth Plan, and to increase investment in agriculture in 1966/67 by at least 40 percent even though it was recognized that this would probably require cutbacks in other areas. In addition, the priority for agricultural development would also apply to the allocation of foreign exchange (11, p. 1).

²¹Lindblom argues strongly that it was the profitability aspect which marks the major distinction of the "New Strategy" (20). Profitability was essential, however, the major distinction in my view remains the complete willingness to make a strong policy commitment to output measures with secondary attention given to rural income distribution.

Under the terms of the Freeman-Subramaniam agreement the international distribution of fertilizer was to be freed and supply was to be augmented by (1) utilizing domestic production capacity fully, (2) imports, and (3) augmenting domestic capacity through private foreign investments in fertilizer plants.²²

During this period AID concentrated on assisting the Indians with the HYV program--particularly through non-project loans for fertilizer. However, continuity with earlier programs of technical assistance in a broad range of production and market activities was maintained as was the support for the University development effort.²³ Price policy also commanded considerable interest--specifically the elimination of the "food zone" procurement system.²⁴

²²To encourage private investment from foreign sources the G. O. I. agreed to offer the prospective firms; (1) pricing and marketing freedom, (2) expeditious negotiation, (3) assurance of foreign exchange for seeding programs, raw materials and spare parts; and (4) special assistance to raise local financing. The U. S. AID Mission in turn offered help in identifying potential investors for new plants, extend risk guarantees, and direct dollar and Cooley loans to fertilizer industries. The success of these joint efforts to encourage private foreign investment has been limited. As of 1969 only two fertilizer plants in India had foreign collaboration.

²³The U. S. Agency for International Development has spent nearly \$22 million in financing cooperation between American and Indian Universities. Of the \$22 million, \$10.5 million has been dollars, the remaining funds were surplus rupees generated under the P. L. 480 program.

²⁴In 1968 Willard Cochrane, a Ford Foundation Consultant, prepared a statement on Indian food and agricultural policy in which he recommends elimination of the food zone system (24). But perhaps the most succinct statement of the assumptions underlying the food zone system and analysis of their applicability is contained in a memorandum prepared by Ken Kauffman which was appended to the 1969 Program Memorandum.

An indication of the success of the HYV program is contained in the FY 1971 Country Field Submission prepared in July of 1969.

"For the past two years we have based our analysis of India's potential for growth on the premise that the major structural obstacle to faster growth--inability to raise food production--need no longer be a brake on progress" (4).

It is clear that the general success of the HYV program is related to a great many factors which have been reviewed-discussed-and reviewed again.²⁵ However, it is important to note that the foundation laid by AID through its University development, participant training, and other technical assistance activities contributed greatly to the success of the HYV program.

1970 and Beyond: Assistance Strategy Issues

The HYV Program represented a pragmatic approach to overcoming lagging food grain production and a growing reluctance of the United States to provide food grains on a concessional basis. The HYV Program, however, required the acceptance of a narrow definition of agricultural development--essential increases in the national food grain production index. To maximize development under the narrow definition it was necessary to ignore the subsequent pressures on economic infrastructure and to accept a strategy that was bound to be highly selective in its impact.²⁶

²⁵The material prepared by the Mission for the Agency Spring Review of the Green Revolution provides a considerable amount of detail regarding the HYV Program for wheat and rice. See (5).

²⁶Thus, as has been said before, the program contained the seeds for the revision of the Indian rural society. The theoretical basis for a strategy of induced institutional revision based upon the creation of social and economic imbalance is contained in (23). The fact that the HYV program created substantial pressure for change is evident from the popular press; see the New York Times, January 8 and 19, 1970.

The AID Mission pointed to the problem in the FY 1971 Country Field Submission:

"It is becoming increasingly evident that satisfactory agricultural development must encompass more than simply increasing the supply of food grains" (4, p. 88).

The authors of the report go on to suggest that: "Political and social considerations require a broader based improvement in farm income" (4, p. 89). The Mission in turn proposes to support programs for, . . . broadening participation in agricultural growth and improvement of the income distribution pattern . . ." (4, p. 89).

The specific programs outlined as important for the attainment of a broader participation include:

(1) "Improvements in credit institutions and procedures to make it possible for the small landowner and tenant farmer to invest in better technology;"

(2) "Better government arrangements for assessing the water development potential of currently unirrigated areas and for expanding of irrigated acreages;"

(3) "Agricultural research and extension programs focusing on better cropping patterns, moisture conservation practices, and crop production systems for rainfed lands."

The definition of agricultural development has, thus, been broadened to include not only the output of agricultural produce but the distribution of its production as well. The addition of source of production to the aggregate production index as a measure of agricultural development represents a substantial improvement. However, this definition neglects the other outputs of a rural social system. A realistic measure of performance in the rural sector must include consideration of the health, education, and political outputs as well as physical products, i.e. the social outputs.

The social outputs are important from a human welfare point of view as well as from an agricultural production viewpoint. Thus, increases in

social outputs are demanded as agricultural production goes up, and in addition, the outputs of the system have a complementary relationship in production.

Operationally a broader definition of agricultural development requires that increasing attention be given to assisting the Indians in developing rural education and health facilities and that investments in non-production oriented undertakings be considered for their productive as well as consumptive effects. The research base required for program planning in a total rural development matrix is lacking. We are well aware of the income elasticity of demand for food but we have little information on the income elasticity for health and educational facilities and services. Likewise we have general knowledge regarding the importance of health and education to the production process but are lacking the detailed analysis required for quantitative assistance programming.²⁷

In addition to a narrow definition of agricultural progress, the HYV program required a production push within the existing agricultural infrastructure.²⁸ It is in this context that the prior support of AID for institution building, participant training, and technical assistance for marketing storage, soil testing, extension development and other activities, contributed to the success of the HYV program. In short, India was able to draw upon accumulated human and physical capital.

²⁷Major studies of the relationship between education and health have been conducted and reported in the following: (17 and 21).

²⁸An approach conceptually indebted to Hirschman's DPA strategy. See (6).

The continued success of the new agricultural strategy will depend upon continued investment in agricultural infrastructure. The demands for increased storage and marketing facilities, protective agricultural research, input delivery systems, and other infrastructure must be met if the spread of science and technology in Indian agriculture is to be maintained.²⁹ Although the general infrastructure needs have been defined--a major task remains to transpose the general requirements into specific projects and programs.

The adoption of the new agricultural strategy required that the G. O. I. accept a program designed to have a selective impact. The impact of the program was selective with regard to crops, geography, and perhaps most important--between socio-economic groups.

It was clear from the beginning of the program that the stringent water requirements of the new varieties would dictate a differing geographic impact in the same manner that the availability of improved plant material was a constraint on the crops involved. The HYV program was equally selective in its socio-economic impact. Thus, as with any system, there were those individuals who were in favored positions within the prevailing socio-economic system. The favored individuals had access to the capital and the knowledge required to take advantage of the new technology and to benefit substantially from the HYV program.

The programs required for dealing with the geographic and cropwise selectivity of the HYV program center on: (1) the development of improved plant material suitable for a wide range of agro-climatic conditions, and

²⁹ Perhaps the best discussion of the so called "second generation problems are the ones by Wharton and D. K. Desai. See (8) and (9).

(2) an expansion of the nation's irrigation system. To the extent that technology is developed that is suited to a wide range of agro-climatic conditions and crops, a wider distribution of the benefits of the HYV program will be attained. As was the case in irrigated areas, there are those in dry land areas who have access "within the system" to the resources and knowledge required for the adoption of new production systems.

What remains is the rural poverty problem--the problem of those who within the current technology do not have enough physical and human resources to earn an adequate living in agriculture. Included in the poverty group are many small holders, tenants, and landless agricultural laborers.³⁰

The crude dimension of the rural poverty problem are known:

"The size of this group of farmers is estimated at approximately two-thirds of all the farm households and they account for about 20 percent of the cultivated land. Whatever the differences in the size of holdings, all owned, partly tenanted or all tenanted, quality of land, cropping pattern, etc., the group as a whole is characterized by the following features: badly fragmented holdings of sometimes more but mostly less than five acres; little irrigation or none at all; insecurity of tenure; low productivity and low income; poor implements; insufficient access to credit; malnutrition to the point of affecting productive efficiency; underemployment and, not surprisingly, the average per acre amount of capital expenditures is a mere Rs 75 as against Rs 716 among big farmers. Most of these farmers have hardly any margin left above subsistence living, and saving for investment is almost precluded. The corollary of this is that the majority of them are not only bypassed by the new technology but are also in a state of gradual deterioration of their assets. In order to provide for basic needs they must compete for outside employment for a sizeable portion of their income. The sum total of all these inadequacies constitute the central problem of small farms and small farmers."

³⁰ The new agricultural strategy was not primarily responsible for the rural poverty problem in India, however, it did widen the disparity between the haves and the have nots. It is true, also that to the extent tenants were displaced to permit the formation of more efficient units or product prices were reduced relatively by increased supplies--the HYV program contributed to the poverty problem.

The G. O. I. through its Small Farmers Program is beginning to work toward a solution to the rural poverty problem. The current goal is to rehabilitate 1.5 to 2.0 million "potentially viable" small farmers by the end of the fourth plan period.

To some extent the solution to the rural poverty problem will be found in programs and policies designed to maintain agricultural production goals. As the irrigation constraint is overcome and the HYV program is extended to farmers with fewer resources through expanded credit and extension programs and further tenure reform--some elements of the current poverty problem will disappear.

It seems evident that the rural poverty problem will be a substantial force in determining G. O. I. agricultural strategy in the 1970's and beyond. The issues will be more specific, i.e. employment, mechanization, etc. but the context will be rural poverty.

Two recent loans from the World Bank group have brought the question of mechanization into focus. The first loan, an agricultural credit program for the Punjab (\$25.5 million) will assist in financing a program of farm mechanization including tractors, harvestors, and other farm implements. The second loan (\$35 million) is a credit program designed to encourage minor irrigation and farm mechanization in Gujarat. The issues were not the need for credit but rather the type of equipment to be introduced and the farmers to be considered as eligible.

In the case of the World Bank loans the issues were resolved in favor of smaller farmers. However, the small farmer-poverty problem will continue to emerge and to demand increasing attention from both the G. O. I. and foreign assistance donors. Thus, if a danger exists, it is not that the poverty problem will be overlooked, but rather that the G. O. I. with

temporary production successes, will tend to downgrade the importance of production oriented programs.

In short, the major agricultural strategy issue facing the Agency concerns the question of problem priority and policy emphasis. The United States will want to play an active role in defining the dimensions of the rural poverty problem and provide financial and technical assistance to help in designing and implementing programs and projects to alleviate the problem.³¹ However, equally, if not more important, will be our continued assistance and encouragement for the commercial agricultural sector.

³¹A major problem in the provision of knowledge and resources to small farmers is to design delivery systems that can service these farmers in an efficient and profitable manner. The Rockefeller sponsored "Puebla Project" in Mexico represents an attempt to design both inputs and delivery systems to service small farmers. Another less recent example is the activity of the Small-Holder Advisory Service operated by the Rubber Research Institute of Malaya.

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17. John Mellor, Et. Al., Developing Rural India: Plan and Practice (Ithaca, New York: Cornell University Press, 1968).
18. John Richardson, Jr., Partners In Development (East Lansing, Michigan: Michigan State University Press, 1969).
19. K. C. Naik, A History of Agricultural Universities (Delhi, India: Navchetan Press, 1968).
20. Lindblom, Character of the New Indian Agricultural Program and Its Implications for U. S. Policy (Mimeo) January 1966.
21. Peaslie, A., "Education's Role In Development", Economic Development and Cultural Change, (April 1969).
22. Review of Recommendations: Report of the Joint Indo-U. S. Technical Assistance Study Team on Agricultural Universities In India (Mimeo).
23. Wayne Schutjer and E. W. Coward, "Planning Agricultural Development: The Matter of Priorities", Journal of Developing Areas, October 1971 (Forthcoming).
24. Willard Cochrane, Food and Agricultural Policy for India (Mimeo, April 1968).

Appendix A

Table 1. AID Financed Participant Trainees From India, Total and In Agriculture, 1950-1969¹

Years	Total	Agriculture	
		Number	Percent of Total
Prior to 1958	545	185	34
1958	63	19	30
1959	260	57	22
1960	617	60	10
1961	638	55	7
1962	373	35	12
1963	423	48	11
1964	335	76	23
1965	312	83	27
1966	149	70	47
1967	209	99	47
1968	229	110	48
1969	303	120	40
Total	4456	1017	23

Source: Agency for International Development Office of International Training, "Report on Participant Training," (W-141) published annually. Agency for International Development, Statistics and Reports Division, "Operations Reports" (W-129) published annually.

¹By Fiscal Year arrival in Country of Training

Table 2. Value of U. S. Agricultural Exports to India Under P. L. 480, Mutual Security Act, and Commercial Sales, 1954-55 to 1968-69

(In Millions of U. S. Dollars)

<u>P. L. 480 Shipments</u>	<u>4,333.3</u>
Sales for foreign currency	3,767.4
Dollar sales	154.4
Disaster relief and economic development	40.7
Voluntary relief agencies	305.4
Barter	65.4
<u>Mutual Security</u>	71.8
<u>Commercial Sales</u>	<u>257.5</u>
Total	<u>4,662.6</u>

Source: The White House, "Annual Report on Activities Under P. L. 480: Ford for Peace", Draft - June 18, 1970, Table II, Appendix B.

Table 3. Public Law 480 - Local Currency Uses In India - July 1, 1954 through December 31, 1969.

(In 1000 Dollar Equivalentents)

<u>Total Amount In Agreements</u>	<u>4,072,754</u>
1) Loans to private enterprise	263,138
2) Loans to foreign government for economic development	2,489,549
3) Grants for economic development	696,945
4) Grants for family welfare	32,600
5) Animal or plant pest control	1,910
6) United States Uses	558,612

Source: The White House, "Annual Report on Activities Under Public Law 480: Food for Peace," Draft, June 18, 1970, Table 13, Appendix B.

Table 4. AID Dollar Financed Technical Assistance and Capital Assistance and Capital Assistance Projects for Agriculture in India 1953-1969¹

Project Title	Year ²	Obligation	Expenditure	
			Grant	Loan
<u>Completed Technical Assistance Projects</u>				
Technical Assistance Supporting Activity	1953		4,310	
Locust Control	1954		556	
Iron & Steel for Agriculture	1954		19,739	
Sindri Fertilizer	1954		17	
Fertilizer	1956		17,310	
Augment Fertilizer Supply	1956			3,800
Citrus Fruits	1957		17	
Asst. Mining Food & Agriculture	1958		33	
Survey & Irrigation Works	1958		477	
Agriculture Information Prod. Training	1959		371	
Cooperative Marketing	1959		20	
Agriculture Mechanical Utilities	1960		206	
Agriculture Program Direction	1961		162	
Farmers Organization	1961		275	
Fisheries	1962		2,902	
Agriculture Economic Research	1962		289	
Cooperative Membership Education	1962		93	
Soil Fertility	1965		1,029	
Agriculture University Development	1965		8,981	
U. P. Agricultural University	1965		343	
Dairy Development	1965		994	
Calcutta Milk Scheme	1965		518	
Agriculture Extension	1968		3,013	
Animal Husbandry	1968		964	
Crop Production	1968		1,536	
Soil & Water Conservation	1968		964	
			65,119	3,800
Total				
<u>Active Technical Assistance Projects</u>				
Crop Production	1955	1,536	1,536	
Agriculture University Development	1963	12,635	10,402	
Soil & Water Management	1966	1,443	870	
Agriculture Production Incentives	1966	365	314	
Rice Research Improvement	1967	312	143	
Agriculture Inputs Development	1967	1,365	874	
Technical Support Agriculture	1968	148	135	
Agriculture Production	1972	2,791	1,851	
		20,595	16,125	
Total				

Table 4, continued

Project Title	Year	Obligation	Expenditure	
			Grant	Loan
<u>Completed Capital Assistance Projects</u>				
Ground Water Irrigation	1962		18,284	
Ground Water Explorations	1962		4,092	
Forest Research	1962		545	
Food Grains Storage	1966		<u>1,664</u>	
Total			24,585	
<u>Active Capital Assistance Projects</u>				
Trombay Fertilizer	1962	66,636		29,354
Beas Dam Project	1966	<u>24,000</u>		<u>9,354</u>
Total		90,636		38,708

Source: Agency for International Development

¹As of June 30, 1969

²If completed project year of completion, others year of initiators.

Table 5. AID and Predecessor Agency Project Loan Expenditure and Obligations: India¹

Fiscal Year	Agricultural Projects ²		Total Projects	
	Expenditures	Obligations	Expenditures	Obligations
(1000's U. S. Dollars)				
Cumulative through 1961	89,005	94,005	329,846	369,413
1962	3,195	1,943	21,471	18,621
1963	1,536	1,387	22,596	4,425
1964	34,846	31,247	382,731	708,099
1965	3,593	-57	128,052	85,690
1966	3,521	35,808	102,027	86,413
1967	4,923	3,506	77,419	20,542
1968	4,325	3,483	46,577	29,929
1969	4,744	41,586	32,866	46,386
Total	149,688	212,908	1,143,585	1,369,518

Source: W-253 Forms - Office of the Controller, and predecessor reports

¹1964 was the first year loan aid was broken down by project.

²The amount of aid going to agriculture was calculated using the project coding system.

Table 6. Use of U. S. Owned Local Currencies and Country Owned Counterpart Funds for Agriculture, 1959-1969

Year	Total Country Withdrawals	Agricultural Withdrawals
(In \$1,000 equivalents)		
1959	14,515	0
1960	79,487	126
1961	119,204	1,857
1962	164,613	4,568
1963	341,709	21,287
1964	492,973	19,591
1965	423,117	15,687
1966	269,064	10,573
1967	492,440	202,906
1968	355,562	173,945
1969	424,332	5,112
Total	3,177,016	455,652

Source: Agency for International Development

Appendix B

ANNOTATED BIBLIOGRAPHY

Agricultural Development Strategy: India
(Annotations prepared by John Varley)

To assure a brief working bibliography the number of items included has been restricted. The initial selection of material for inclusion was based upon the contribution of the document to understanding agricultural development strategy in India. However, preference was given to materials not generally available, such as AID program documents and unpublished sector studies.

1. AID Loan Paper.

The loan paper for a \$50 million fertilizer loan to India contains extracts from a speech made by Shri C. Subramaniam, Minister of Food and Agriculture, in the Rajya Sabha on December 7, 1965. The speech outlined the elements of the "new agricultural strategy".

2. Billings, Martin H. and Arjan Singh, Farm Mechanization and the Green Revolution, 1968-1984, The Punjab Case, U. S. AID/New Delhi, April 22, 1970.

The Punjab and Haryana states are presently undergoing substantial farm mechanization untouched by the hands of public policy. This study attempts to:

- 1) estimate whether the present conventional sources of every - human and bullock - will become a constraint to farm production during the period 1968-1984
- 2) what the effect is on the seasonal demand for labor and bullocks resulting from incremental changes in farm energy technology

- 3) examine the composition of labor (family or hired) affected by these changes, and the effect on different size farms.

3. Brown, Dorris, The Intensive Agricultural Districts Programme and Agricultural Development in Punjab, India, August 14, 1967.

Evaluates impact of five-year old IADP on agricultural development in Ludhiana District, Punjab.

The rate of growth of output with IADP was not significantly higher than in other districts. The same was true of crop yields and income to Ludhiana cultivators.

Higher returns would probably have resulted if solutions had been found for restraints such as:

- 1) inadequacy and inefficient use of water
- 2) livestock-land use, labor-power complex
- 3) low crop-response coefficients
- 4) low availability of production supplies

Using the 1963-64 crop response coefficients the IADP "Package" was an economic loss to the farmer if purchased in its entirety.

4. Carlin, Alan Philip, "An Evaluation of U. S. Government Aid of India" M. I. T., June 1964.

This Ph. d. thesis is an evaluation of U. S. Government Aid to India through 1962 against the goal of increasing income to the recipient country. The focus is on the micro or project level. The transportation and irrigation sectors are selected for detailed case studies.

The analysis of aid to transportation finds that project ineffective by the above criteria. The study of aid to irrigation centers on the state tubewells built in North India and suggests the rate of return on such investments is as low as 3 percent.

U. S. aid could be more effective with influence exerted on the program level to improve the balance of payments and on the project level to increase use of techno-economic analysis.

5. Cochrane, Willard W., "Food and Agricultural Policy for India", Ford Foundation Consultant on Agricultural Planning, April 4, 1968.

Review and reappraisal of food policies and programs following the large grain harvest of 1967-68.

He examines the issues of:

- 1) food zones and food management
- 2) stabilization - price and stock policy
- 3) food distribution policies
- 4) small farmer
- 5) employment

He discusses food and agricultural policy under:

- 1) sustained food grain surplus conditions
- 2) chronic food grain shortage conditions
- 3) food grain surplus - shortage gyrations.

6. Cummings, Ralph W., Jr., Long Range Agricultural Adjustment Analysis: India, An Agenda for Policy Research, Annex F to FY 1971 CFS from U. S. AID/India to AID/Washington.

The "Green Revolution" has spurred rethinking about potential problems areas in the long term growth of Indian agriculture. Cummings discusses:

- 1) the general order of targets required if agriculture is to play a key development role
- 2) parameters of policies to be considered in order to achieve the targets

He concludes that the success of the Green Revolution is not assured. Continued government support is needed. The Green Revolution has relieved inflationary pressure and permitted

the reactivation of the Fourth Five Year Plan, postponed for 3 years, which unlocks the door to obtaining the necessary domestic financial resources.

7. Dward Kinath, Ramaswamy, "The Agricultural University in India", U. S. I. A., New Delhi, 1968, 12 p.

Pamphlet briefly discusses the role the Agricultural University plays in developing Indian Agriculture.

8. Frankel, Francine, "India's New Strategy of Agricultural Development", The Journal of Asian Studies, 28 (August 1969).

A brief review of the development of the High Yielding Varieties Program and a critical appraisal of its successes.

9. IBRD, Bohr, Kenneth A., (New Delhi Office), The Fertilizer Program in India, South Asia Department, April 22, 1969.

Describes the program to domestically produce India's fertilizer requirements.

The new capacity under construction is not enough to prevent continued increase in imports of fertilizer and fertilizer raw materials over the next five years.

10. _____, Indian Economic Policy and the Fourth Five Year Plan (in four volumes). Volume II, Agricultural Policy in India, Asia Department, March 7, 1967.

Written as a supplement to a comprehensive report in April 1965, the authors feel that the intervening droughts of 1965-1966 and 1966-1967 are having a salutary effect by promoting the organization and dissemination of new technologies. They propose that the new resolve be turned toward the problems of:

- 1) a better organized seed industry
- 2) shortage of and mobility of fertilizer supplies and plant protection materials
- 3) critically short credit supply

- 4) stable price policy
- 5) more ample programme of research and extension

11. Kauffman, Kenneth M., The Indian Economy: Some Recent History and Near Term Prospects, March 23, 1967.

Despite political preoccupations, civil unrest and food crises, India recently has made significant changes in economic policies especially in agriculture and foreign exchange management.

If these policies are maintained, if the level of foreign aid is at least maintained, and if monsoons return to normal, then near term prospects are brighter than indicated by recent performance.

12. Lindblom, "Character of New Indian Agricultural Program and its Implications for U. S. Policy", U. S. AID, January 1966.

India has shifted from a belief in persuasion and teaching farmers to change as a way of increasing farm output. The new policy is to make innovation profitable.

Possible AID contributions toward making new technology appealingly profitable are discussed.

13. Naik, K. C., A History of Agricultural Universities, Navchetan Press, Delhi, India, 1968.

An analysis of the development of Indian agricultural, educational, and research institutions. The contributions of the United States Government, Universities and Foundations to the development of these institutions is spelled out.

14. Please, Stanley, Aspects of Agricultural Tax Policy in India and Pakistan, IBRD, November 1968, 44 p. (To be delivered at "International Seminar on Incentives to Promote Agricultural Development", Istanbul, Turkey, November 18-22, 1968.)

Development strategy has shifted the priority recorded agricultural output. The implications for agricultural taxation policy suggest a shift in focus from "mobilization of an assumed agricultural surplus for economic development" to "ensuring that surplus is generated and secondly, with its mobilization". Using this criteria he examines (both the existing structures and some proposed schemes):

- 1) taxes on income of the Agricultural Sector
- 2) taxes on consumption of the Agricultural Sector
- 3) taxes on inputs of the Agricultural Sector.

15. Propp, Kathleen M., The Establishment of Agricultural Universities in India - A Case Study of U. S. AID - U. S. University Technical Assistance, University of Illinois, October 1968, p. 67.

A historical analysis of U. S. university technical assistance to Indian agricultural education beginning in 1952 through the Agricultural Education and Research Project, 1955-1961 and subsequent Agricultural University Development Project from 1961 to the present.

16. Report of the Joint Indo-U. S. Technical Assistance Study Team on Agricultural Universities in India, November 1967, 173 p., plus appendices.

The Team made a close study of the educational facilities available in agriculture, veterinary science and allied subjects at all levels from high school to post graduate, recommending certain existing research institutes for development into post graduate centers and certain regions for location of new agricultural and veterinary colleges.

The Team also recommended that agricultural colleges introduce courses for extension workers and promote undergraduate specialization in extension.

17. "Report of the Second Joint Indo-American Team on Agricultural Education Research and Extension", Indian Council of Agriculture, editor P. Kachrov Research, New Delhi, July 1960.

The Team was commissioned to do an evaluation of work in the areas of agricultural education, research, and extension in the 5 years since the First Team had reported its recommendation for strengthening the programme of research and education in India. The present Team was also asked for recommendations for the Third "5" Year Plan and for a review of the inter-institutional agreement of 1955 with 5 Land-Grant Universities of the U. S. A. to see if it should be continued.

The Team made 67 recommendations including continuing the Inter-University Program.

18. "Review of Recommendations of the Joint Indo-U. S. Technical Assistance Study Team on Agricultural Universities in India", U. S. AID/India.

Report reviews individually each of 30 recommendations made by the study team. The author decides that cumbersome administrative procedures are retarding implementation of University Building. Suggests high level discussions and establishment of central office for expediting routine matters.

19. Romig, W. D., Proposed Study of Optimum Use of Water in India, NESA/ENGR, AID, April 24, 1968, 28 p.

Proposes studies that would provide comparative information and serve as a guide to Government of India in considering Modification of its policies regarding water use, and to AID in deciding its course of action.

A study is outlined which is aimed at deciding whether more intensive irrigation is desirable or whether some other basic concept is preferable.

20. Russell, M. B. and G. K. Brinegar, The Development and Adoption of Production Technology, April 15, 1969, Urbana, Illinois, AID Contract 42 p.

The authors, an economist and an agronomist, consider increasing India's agricultural production potential. They propose locating and organizing production to most efficiently benefit from the different geographical, climatological regions and, simultaneously, input and output markets and agribusiness industries.

Some policy suggestions for projects were for:

- 1) improved on-the-farm water management
- 2) market development
- 3) increasing the flow of market and crop forecast information to farmers.

21. Sloan, H. J. and J. B. Davis, The Agricultural Production Project in India Field Problems Units on Appraisal, U. S. AID/India, New Delhi, May 20, 1969, Project 386-11-110-366.

The Agricultural Production Project provides assistance to India's Programs for increasing agricultural production, especially food grains. The Field Problems Units are concerned with crop production practices and farm implements, mostly with respect to High Yielding Varieties.

Recommendations are made for the U. S. members of these F. P. U.'s about priorities and communication. Among them is the recommendation that is the Indian member of the F. P. U. to take more initiative and play a greater leadership role in the F. P. U.

22. Streeter, Carroll, A Partnership to Improve Food Production In India, the Rockefeller Foundation, 1969.

A report of ten years of cooperative work between the Rockefeller Foundation and the Government of India toward self-sufficiency in food grain production.

23. The Ford Foundation Agricultural Production Team, Report on India's Food Crisis and Steps to Meet It, Government of India, April 1959.

This watershed document in Indian Agriculture is a report of a group of experts in response to the 1958 drought and the expected 26 million ton shortfall in food grain supplies expected by 1966.

A series of recommendations were made, the most important of which was for concentration of efforts in certain areas and certain crops determined to have the best potential for growth.

24. The Rome Treaty - An agreement between U. S. Secretary of Agriculture Freeman and Indian Minister of Agriculture, Subramaniam, November 1965.

The document outlines the actions India was to undertake to initiate the new agricultural strategy in 1966. The major elements of the agreement center on fertilizer, imported plant material, and a geographic production concentration.

25. United States Information Service, "United States Economic Assistance to India, June 1951-January 1970", No. 21, New Delhi.

Breaks down aid by funding source, presents a description of strategy and projects to all sectors, agricultural and others.

26. In addition to the above materials the IBRD reports and the Indian Five Year plans and mid-term appraisals are useful sources.