PD-AAD-162-B1

388-0035-②

198p

UNCLASSIFIED

DEPARTMENT OF STATE
AGENCY FOR INTERNATIONAL DEVELOPMENT
Washington, D. C. 20523

PROJECT PAPER

Proposal and Recommendations
For Review
FY 1977

BANGLADESH: Agricultural Inputs Project III

388-0035

UNCLASSIFIED

OPTIONAL FORM NO. 10
MAY 1962 EDITION
GSA FPMR (41 CFR) 101-11.6

UNITED STATES GOVERNMENT

Memorandum

TO : All Personnel in Possession of Subject Project Paper

DATE: August 24, 1977

FROM : ASIA/PD/SA: Bruce Odell

SUBJECT: Project Paper - Proposal and Recommendations for Review, FY 1977 Bangladesh - Agricultural Inputs Project III

Please make the following corrections to the subject Project Paper:

ANNEX C, Page 1 of 2, Environmental Assessment

Paragraph one - change the word loan to grant.

ANNEX I, Page 1 of 1, Project Description

Paragraph two - change $15.25 million to $27.50 million

ANNEX J, Page 1 of 2, Project Authorization (draft)

Line 4 - change fifteen million two hundred and fifty thousand (15,250,000) to twenty seven million five hundred thousand (27,500,000).

Project Paper Facesheet

Substitute the attached facesheet for the three existing facesheets in the Project Paper.

AGENCY FOR INTERNATIONAL DEVELOPMENT

PROJECT PAPER FACESHEET

1. TRANSACTION CODE: [A] (A = ADD, C = CHANGE, D = DELETE) — PP

2. DOCUMENT CODE: 3

3. COUNTRY/ENTITY: BANGLADESH

4. DOCUMENT REVISION NUMBER:

5. PROJECT NUMBER (7 digits): 388-0035

6. BUREAU/OFFICE: A. SYMBOL: ASIA; B. CODE: 04

7. PROJECT TITLE (Maximum 40 characters): Agricultural Inputs Project III

8. ESTIMATED FY OF PROJECT COMPLETION: FY 79

9. ESTIMATED DATE OF OBLIGATION: A. INITIAL FY 77; C. FINAL FY 77; B. QUARTER 4 (Enter 1, 2, 3, or 4)

10. ESTIMATED COSTS ($000 OR EQUIVALENT $1 =)

A. FUNDING SOURCE	FIRST FY B. FX	FIRST FY C. L/C	FIRST FY D. TOTAL	LIFE OF PROJECT E. FX	LIFE OF PROJECT F. L/C	LIFE OF PROJECT G. TOTAL
AID APPROPRIATED TOTAL						
(GRANT)	(27,440)	(60)	(27,500)	(27,440)	(60)	(27,500)
(LOAN)	( )	( )	( )	( )	( )	( )
OTHER U.S. 1.						
OTHER U.S. 2.						
HOST COUNTRY	-	87,780	87,780	-	87,780	87,780
OTHER DONOR(S)	16,662	-	16,662	16,662	-	16,662
TOTALS	44,102	87,840	131,942	44,102	87,840	131,942

11. PROPOSED BUDGET APPROPRIATED FUNDS ($000)

A. APPROPRIATION	B. PRIMARY PURPOSE CODE	PRIMARY TECH. CODE C. GRANT	PRIMARY TECH. CODE D. LOAN	E. 1ST FY 77 F. GRANT	E. 1ST FY 77 G. LOAN	H. 2ND FY 78 I. GRANT	H. 2ND FY 78 J. LOAN	K. 3RD FY 79 L. GRANT	K. 3RD FY 79 M. LOAN
(1) FN	130	011		27,500			-		
(2)									
(3)									
(4)									
TOTALS									

A. APPROPRIATION	N. 4TH FY — O. GRANT	N. 4TH FY — P. LOAN	Q. 5TH FY — R. GRANT	Q. 5TH FY — S. LOAN	LIFE OF PROJECT T. GRANT	LIFE OF PROJECT U. LOAN
(1) FN					27,500	
(2)						
(3)						
(4)						
TOTALS						

12. IN-DEPTH EVALUATION SCHEDULED: MM 01 YY 79

13. DATA CHANGE INDICATOR: WERE CHANGES MADE IN THE PID FACESHEET DATA, BLOCKS 12, 13, 14, OR 15 OR IN PRP FACESHEET DATA, BLOCK 12? IF YES, ATTACH CHANGED PID FACESHEET. [2] (1 = NO, 2 = YES)

14. ORIGINATING OFFICE CLEARANCE

SIGNATURE

TITLE: Alexander R. Love, ASIA/PD AID Washington

DATE SIGNED: MM 08 DD 15 YY 77

15. DATE DOCUMENT RECEIVED IN AID/W OR FOR AID/W DOCUMENTS, DATE OF DISTRIBUTION: MM 08 DD 15 YY 77

AID 1330-4 (3-78)

AGENCY FOR INTERNATIONAL DEVELOPMENT

PROJECT PAPER FACESHEET

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3. COUNTRY/ENTITY: BANGLADESH

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6. BUREAU/OFFICE: A. SYMBOL: ASIA; B. CODE: 04

7. PROJECT TITLE (Maximum 40 characters): Agricultural Inputs Project III

8. ESTIMATED FY OF PROJECT COMPLETION: FY 79

9. ESTIMATED DATE OF OBLIGATION: A. INITIAL FY 77; B. QUARTER 4 (Enter 1, 2, 3, or 4); C. FINAL FY 77

10. ESTIMATED COSTS ($000 OR EQUIVALENT $1 -)

A. FUNDING SOURCE	FIRST FY B. FX	FIRST FY C. L/C	FIRST FY D. TOTAL	LIFE OF PROJECT E. FX	LIFE OF PROJECT F. L/C	LIFE OF PROJECT G. TOTAL
AID APPROPRIATED TOTAL						
(GRANT)	(27,440)	(60)	(27,500)	(27,440)	(60)	(27,500)
(LOAN)	( )	( )	( )	( )	( )	( )
OTHER U.S. 1.						
OTHER U.S. 2.						
HOST COUNTRY	-	87,780	87,780	-	87,780	87,780
OTHER DONOR(S)	16,662	-	16,662	16,662	-	16,662
TOTALS	44,102	87,840	131,942	44,102	87,840	131,942

11. PROPOSED BUDGET APPROPRIATED FUNDS ($000)

A. APPROPRIATION	B. PRIMARY PURPOSE CODE	PRIMARY TECH. CODE C. GRANT	PRIMARY TECH. CODE D. LOAN	E. 1ST FY 77 F. GRANT	E. 1ST FY 77 G. LOAN	H. 2ND FY 78 I. GRANT	H. 2ND FY 78 J. LOAN	K. 3RD FY 79 L. GRANT	K. 3RD FY 79 M. LOAN
(1) FN	130	011							
(2)							-	3,075	
(3)									
(4)									
TOTALS									

A. APPROPRIATION	N. 4TH FY — O GRANT	N. 4TH FY — P. LOAN	Q. 5TH FY — R. GRANT	Q. 5TH FY — S. LOAN	LIFE OF PROJECT T. GRANT	LIFE OF PROJECT U. LOAN
(1)					27,500	
(2)						
(3)						
(4)						
TOTALS						

12. IN-DEPTH EVALUATION SCHEDULED: MM 01 YY 79

13. DATA CHANGE INDICATOR. WERE CHANGES MADE IN THE PID FACESHEET DATA, BLOCKS 12, 13, 14, OR 15 OR IN PRP FACESHEET DATA, BLOCK 12? IF YES, ATTACH CHANGED PID FACESHEET.

2 (1 = NO, 2 = YES)

14. ORIGINATING OFFICE CLEARANCE

SIGNATURE:

TITLE: Alexander R. Love
ASIA/PD, AID Washington

DATE SIGNED: MM 08 DD 15 YY 77

15. DATE DOCUMENT RECEIVED IN AID/W, OR FOR AID/W DOCUMENTS, DATE OF DISTRIBUTION: MM 00 DD 15 YY 77

AID 1330-4 (3-76)

AGENCY FOR INTERNATIONAL DEVELOPMENT

PROJECT PAPER FACESHEET

1. TRANSACTION CODE: [A] A ADD, C CHANGE, D DELETE

PP

2. DOCUMENT CODE: 3

3 COUNTRY ENTITY: BANGLADESH

4. DOCUMENT REVISION NUMBER:

5 PROJECT NUMBER (7 digits): 388-0035

6. BUREAU OFFICE: A SYMBOL: ASIA; B CODE: 04

7. PROJECT TITLE (Maximum 40 characters): AGRICULTURAL INPUTS PROJECT III

8 ESTIMATED FY OF PROJECT COMPLETION: FY 79

9. ESTIMATED DATE OF OBLIGATION: A INITIAL FY 77; B. QUARTER 4; C. FINAL FY 77 (Enter 1, 2, 3, or 4)

10. ESTIMATED COSTS ($000 OR EQUIVALENT $1 = 15.00 TAKA)

A. FUNDING SOURCE	FIRST FY B. FX	FIRST FY C. L.C.	FIRST FY D. TOTAL	LIFE OF PROJECT E. FX	LIFE OF PROJECT F. L.C.	LIFE OF PROJECT G. TOTAL
AID APPROPRIATED TOTAL	15190	60	15250	15190	60	15250
GRANT	(15190)	(60)	(15250)	(15190)	(60)	(15250)
LOAN	( )	( )	( )	( )	( )	( )
OTHER U.S. 1.						
OTHER U.S. 2.						
HOST COUNTRY	-	87780	87780	-	87780	87780
OTHER DONOR'S	27822	-	27822	27822	-	27822
TOTALS	43012	87840	130852	43012	87840	130852

11. PROPOSED BUDGET APPROPRIATED FUNDS ($000)

A. APPROPRIATION	B. PRIMARY PURPOSE CODE	PRIMARY TECH. CODE C. GRANT	PRIMARY TECH. CODE D. LOAN	E. 1ST FY 77 F. GRANT	E. 1ST FY 77 G. LOAN	H. 2ND FY 78 I. GRANT	H. 2ND FY 78 J. LOAN	K. 3RD FY 79 L. GRANT	K. 3RD FY 79 M. LOAN
(1) FN	130	011	-	-		12175		3075	
(2)									
(3)									
(4)									
TOTALS				-		12175		3075	

A. APPROPRIATION	N. 4TH FY ___ O. GRANT	N. 4TH FY ___ P. LOAN	Q. 5TH FY ___ R. GRANT	Q. 5TH FY ___ S. LOAN	LIFE OF PROJECT T. GRANT	LIFE OF PROJECT U. LOAN
(1)					15250	
(2)						
(3)						
(4)						
TOTALS					15250	

12. IN-DEPTH EVALUATION SCHEDULED: MM 01 YY 79

13. DATA CHANGE INDICATOR. WERE CHANGES MADE IN THE PID FACESHEET DATA, BLOCKS 12, 13, 14, OR 15 OR IN PRP FACESHEET DATA, BLOCK 12? IF YES, ATTACH CHANGED PID FACESHEET.

[2] 1 NO 2 YES

14. ORIGINATING OFFICE CLEARANCE

SIGNATURE: J. Toner

TITLE: JOSEPH S. TONER, DIRECTOR USAID BANGLADESH

DATE SIGNED: MM 05 DD 01 YY 77

15. DATE DOCUMENT RECEIVED IN AID/W, OR FOR AID/W DOCUMENTS, DATE OF DISTRIBUTION: MM DD YY

AID 1330-4 (3-76)

AGENCY FOR INTERNATIONAL DEVELOPMENT

PROJECT PAPER FACESHEET

1. TRANSACTION CODE: C (A = ADD, C = CHANGE, D = DELETE)

PP

2. DOCUMENT CODE: 3

3. COUNTRY/ENTITY: BANGLADESH

4. DOCUMENT REVISION NUMBER:

5. PROJECT NUMBER (7 digits): 388-0035

6. BUREAU/OFFICE: A. SYMBOL: ASIA; B. CODE: 04

7. PROJECT TITLE (Maximum 40 characters): AGRICULTURAL INPUTS

8. ESTIMATED FY OF PROJECT COMPLETION: FY 79

9. ESTIMATED DATE OF OBLIGATION: A. INITIAL FY 77; C. FINAL FY 77; B. QUARTER 3 (Enter 1, 2, 3, or 4)

10. ESTIMATED COSTS ($000 OR EQUIVALENT $1 =)

A. FUNDING SOURCE	FIRST FY B. FX	FIRST FY C. L/C	FIRST FY D. TOTAL	LIFE OF PROJECT E. FX	LIFE OF PROJECT F. L/C	LIFE OF PROJECT G. TOTAL
AID APPROPRIATED TOTAL	10100	-	10100			
(GRANT)	(10100)	(-)	(10100)	( )	( )	( )
(LOAN)	(-)	(-)	(-)	( )	( )	( )
OTHER U.S. 1.	-	-	-			
OTHER U.S. 2.	-	-	-			
HOST COUNTRY	-	25231	25231			
OTHER DONOR(S)	11475	-	11475			
TOTALS	21575	25231	46806			

11. PROPOSED BUDGET APPROPRIATED FUNDS ($000)

A. APPROPRIATION	B. PRIMARY PURPOSE CODE	PRIMARY TECH. CODE C. GRANT	PRIMARY TECH. CODE D. LOAN	E. 1ST FY 77 F. GRANT	E. 1ST FY 77 G. LOAN	H. 2ND FY 78 I. GRANT	H. 2ND FY 78 J. LOAN	K. 3RD FY ___ L. GRANT	K. 3RD FY ___ M. LOAN
(1) FN	113	011		10100					
(2)									
(3)									
(4)									
TOTALS				10100					

A. APPROPRIATION	N. 4TH FY ___ O. GRANT	N. 4TH FY ___ P. LOAN	Q. 5TH FY ___ R. GRANT	Q. 5TH FY ___ S. LOAN	LIFE OF PROJECT T. GRANT	LIFE OF PROJECT U. LOAN
(1)						
(2)						
(3)						
(4)						
TOTALS						

12. IN-DEPTH EVALUATION SCHEDULED: MM 04 YY 78

13. DATA CHANGE INDICATOR. WERE CHANGES MADE IN THE PID FACESHEET DATA, BLOCKS 12, 13, 14, OR 15 OR IN PRP FACESHEET DATA, BLOCK 12? IF YES, ATTACH CHANGED PID FACESHEET.

[ ] 1 = NO, 2 = YES

14. ORIGINATING OFFICE CLEARANCE

SIGNATURE: /s/

TITLE: David M. Wilson, Acting Director

DATE SIGNED: MM 12 DD 23 YY 76

15. DATE DOCUMENT RECEIVED IN AID/W, OR FOR AID/W DOCUMENTS, DATE OF DISTRIBUTION: MM DD YY

AID 1330-4 (3-76)

BANGLADESH
AGRICULTURAL INPUTS PROJECT III
FY 1977 PROJECT PAPER

Table of Contents

BANGLADESH
AGRICULTURAL INPUTS PROJECT III

Definitions of Rates, Weights and Terms

Currency

U.S. Dollar $1.00 = Taka 15.0

Weights

One Maund = 40 Seers = 82.2 pounds
Metric Ton (MT) = 2,204.6 pounds (26.82 Maunds)
One Seer = 2.06 pounds

Fertilizers

Ammonium Sulphate = AS
Triple Super Phosphate (0-46-0) = TSP
Muriate of Potash = MP
NPK = Symbols for Nitrogen, Potassium, and Potash respectively
Complex fertilizers containing, in any combination, Nitrogen, Phosphorous and Potassium = N-P-K
Rock Phosphate = The component of TSP which provides the phosphate content.

Rice Seasons - Approximate

Aus season (about one-third of the total paddy acreage). Aus seeding is done between mid-March and beginning May; the crop is harvested between beginning July and mid-August.

Aman season (nearly 60 percent of the total paddy acreage). Seedlings are raised in June-July; the crop is harvested between mid-November and end-December.

The Boro (winter) crop. Seeds are planted from November on; the crop is harvested between the end of April and May.

Government Administrative Data

Divisions	=	Four nationwide
Districts	=	19 (20 Agricultural)
Thanas	=	420; size about 10-15 square miles
Unions	=	4,000 (plus); about 10 per thana
Villages	=	Approximately 15 per union; 65,000 nationwide.

Land

Bigha — A unit of land. The size of a bigha varies over Bangladesh from about one-third acre to one-half acre. In this paper one bigha is used as one-third acre (.135 hectare).

Organizations

Bangladesh Agricultural Development Corporation (BADC) - Government Corporation responsible for supplying all agricultural inputs.

Bangladesh Chemical Industries Corporation (BCIC) - Government Corporation in charge of domestic fertilizer manufacturing, among other responsibilities.

Bangladesh Inland Water Transport Corporation (BIWTC) - Government common carrier for water transport.

Integrated Rural Development Program (IRDP) - Government agency charged with rural development, principally directed through multipurpose cooperatives.

Thana Central Cooperative Associations (TCCAs) - Thana level cooperative groups sponsored by IRDP.

Terms

Godown - warehouse

Paddy - Rice which is either growing, or cut or unmilled.

Crop Year - From July 1 to June 30.

Borgadar - Sharecropper


BANGLADESH
POLITICAL DIVISIONS
10 0 10 20 30 40 MILES
SCALE
Thakurgaon
Nilphamari
Kurigram
RANGPUR
DINAJPUR
Gaibandha
Sunamganj
Jamalpur
Netrakona
SYLHET
BOGRA
Naogaon
MYMENSINGH
Nawabganj
Moulvi Bazar
Sirajganj
Kishoreganj
RAJSHAHI
Natore
Habiganj
TANGAIL
PABNA
Brahmanbaria
KUSHTIA
Manikganj
Meherpur
Dacca
Gopalganj
Chuadanga
FARIDPUR
Narayanganj
Jhenaidah
Munshiganj
Magura
COMILLA
Chandpur
JESSORE
Narail
Madaripur
Sapaigani
Feni
Ramgarh
KHULNA
NOAKHALI
Satkhira
BARISAL
Bhola
Bagerhat
RANGAMATI
Pirojpur
Jhalokati
Patuakhali
CHITTAGONG
Barguna
Bandarban
Cox's Bazar
INTERNATIONAL BOUNARY
DIVISION "
DISTRICT "
SUBDIVION "
THANA "
CAPITAL CITY
DIVISIONAL HEADQUARTER
DISTRICT "
SUBDIVISION "
THANA "
October, 1975

AGRICULTURAL INPUTS PROJECT III

Part I. Project Summary and Recommendation

A. Recommendation

Grant in FY 1977 $27,500,000

B. Description of the Project

The project is directed to improvement in the Bangladesh system of fertilizer distribution and marketing, particularly to access to fertilizer at reasonable prices for all farmers. To meet these objectives the Bangladesh Agricultural Development Corporation (BADC) will take implementing action with respect to the following:

a. Increasing incentives to fertilizer dealers including implementation on a test basis of a quantity discount for increased fertilizer purchase;

b. Permitting farmers to buy up to a stated amount of fertilizer directly from BADC warehouses;

c. Allowing farmers to buy from any dealer whether or not in the farmer's own thana or union;

d. Optimizing the number of dealers at union level, including simplifying the dealer application process;

e. Regularizing sales at local markets (hats) to permit dealers to sell at such hats within the union and distance category in which the dealer is resident;

f. Permitting dealers to buy fertilizer from the nearest BADC thana warehouse even if it is not located in the same thana where the dealer is located.

In carrying out the project, the AID grant of $27.50 million will finance the costs of procurement, shipping and insurance of fertilizer to assist in meeting the import requirements for the 1978-79 crop year. The grant will also finance limited third country training and a portion of in-country training for BADC personnel, as well as test materials and equipment and a small amount of office equipment.

BADC will implement the system changes under a. through f. above, will issue the IFBs for fertilizer to be imported, review bids and make awards, and will also arrange for in-country transport of fertilizer and for storage. BADC will coordinate with other Bangladesh Government agencies as necessary as well as with AID and other donors. Covenants incorporating these steps are set forth under Part IV. Implementation Planning.

The project components are each directed to increasing access of farmers to fertilizer at the point of purchase, while at the same time providing dealers with greater incentive and motivation for encouraging fertilizer sales and use. The AID financed fertilizer is essential to maintenance of adequate supply which is a basic precondition to general availability of fertilizer.

The planned funding and system modifications are specifically designed to achieve an adequate supply of fertilizer at the local level, increase incentives to dealers, and provide a basis for greater competition among dealers. These steps should act to the benefit of all farmers in improving access to fertilizer at reasonable prices. Given the accomplishment of these activities it is assumed that fertilizer sales and use will increase and that its application to the farmer's field will have proven effect on yields. The end of project status will see an increase in national fertilizer sales during the 1978-79 and 1979-80 crop years of at least six percent over those of the immediately preceding crop years.

C. Summary Findings

Bangladesh has a land area of 33 million acres of which about 22.5 million acres are cultivated. The application of fertilizer will increase the yields per acre and raise production rates. Adequate supply, improved incentives, greater competition among dealers and increased access should lead to greater fertilizer use. As illustrated in the financial analysis, however, the benefits of fertilizer use will continue to favor owner-cultivators and owner-managers as distinct from sharecroppers under prevailing conditions of land tenure, availability and cost of credit, and agricultural output prices.

The social soundness analysis concludes that growth in fertilizer use is feasible within the socio-cultural setting of Bangladesh. This is particularly true for farmers who have title to their own land because land titles ensure cheap credit which in turn makes the adoption of HYV technology economically very attractive. Whether this growth will be

equitable and benefit the plurality of Bangladeshi farmers who are non-owner cultivators depends heavily on increases in farmgate harvest prices, possibly stimulated by an aggressive Government procurement program, and on institutional credit being made more readily available to these farmers.

The project meets all applicable statutory criteria; the statutory checklist is attached hereto at Annex F. The Mission Director has certified that Bangladesh has the capability to maintain and utilize the project effectively; such certification is found at Annex G.

D. Project Issues

A central issue in the project is the prospective role of the private sector; whether (and if so, to what extent) the BADC system should be set aside and the main role taken up by the private sector.

This issue is one more of timing and approach than a question which can be answered in an absolute positive or negative sense. The BADC charter itself (see Annex B.9) recognizes the ultimate goal of turning over certain functions to cooperatives, and one of the principal recommendations of the Interim Report of the Ashuganj Study looks to an eventual full private sector role in fertilizer marketing and distribution. (See Part II. A Background and Annex B.13 The Ashuganj Study.)

The agreed components of this project move in the direction of an increased role for the private sector, principally through increased dealer incentives and scope for greater competition. Pending the broader analysis of this issue to be included in the follow-on FY 1978 Fertilizer Distribution Improvement Project, as well as completion of the Ashuganj Study, the conclusion of this paper (see Part II.A below) is that the steps incorporated above represent the reasonable extent to which the issue should be addressed by this project.

E. Project Committees

USAID Project Committee

Emory M. Howard, AGR, Chairman
Dean Alter, CDD
Duane Clayton, CDD
William T. Oliver, PRO
Lauryn C. Drengler, CONT
Douglas Robertson, RLA

AID/W Project Committee

Bruce J. Odell, ASIA/PD, Chairman
Robert W. Wiley, COM/SA
Calvin Martin, ASIA/TR
Peter Bloom, GC/ASIA
Joan B. Coe, ASIA/BIS
Robert Meehan, ASIA/DP

II. Project Background and Detailed Description

A. Background

1. General

Adequate supply of fertilizer is an essential component for increasing Bangladesh agricultural production. Given the constraint on expansion of cultivable area, crop increases have to be achieved through higher yields, and in immediate terms, this means an expanding requirement for fertilizer. The AID commitment to this project is therefore a reflection of concern for the need for higher rural incomes as these depend upon increase in food production.

The background to this project dates from the initial FY 1974 and FY 1975 agricultural inputs loans.[1/] While accepting the urgency of Bangladesh's need for imports, AID at the same time recognized it was not sufficient simply to finance fertilizer. Substantive improvements had to be achieved in the Bangladesh fertilizer marketing and distribution system. The relevant issues included basic distribution policies, the marketing mechanism and incentives, credit availability and storage capacity, adequacy of transport, domestic production improvements, improved promotion, the standard of assistance from the agricultural extension services, competitive pricing and elimination of the blackmarket.

2. Studies of the Fertilizer System

The FY 1974 AID loan looked principally for the resolution of these questions to the findings of the study then being conducted by the Tennessee Valley Authority (TVA). The report [2/] however as finally released in October 1974 was not as helpful as was hoped. Apart from a useful assembling of data on fertilizer imports, marketing, manufacturing and distribution, the report did not focus on specific practical points of immediate difficulty nor did it direct itself to the scope of attainable changes to meet these problems. The FY 1975 loan therefore assumed these concerns would be

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1/ Since Independence, AID has financed a total of 178,321 MT of urea, 231,590 MT of TSP, 40,000 MT of rock phosphate, and 10,000 MT of MP. Financing was provided under the Relief and Rehabilitation Grant ($203 million) and Agricultural Loans I and II (388-T-001 in FY 1974 for $25.0 million and 388-T-002 in FY 1975 for $30.0 million). This requirement for AID assistance will continue. See projections at Annex B.1.

2/ Bangladesh Fertilizer Situation, prepared for AID by TVA, October 1974.

addressed by the fertilizer marketing and distribution study to be carried out under the Ashuganj Fertilizer Project (the Ashuganj Study)[3]. According to the terms of the AID loan agreement for the Ashuganj Project the Bangladesh Government undertakes to carry out such a study identifying procedural and institutional improvements required for the system as well as the capital necessary to implement these improvements. The Government is obligated to formulate a program to carry out the accepted recommendations of the Study. The loan agreement[4] requires that within two months of completion of the Study, the Government will furnish this program to the lenders for review and approval. The agreement further provides the Government after consultation with the lenders will implement the program in time to ensure the efficient marketing and distribution of fertilizer manufactured by the Ashuganj plant. Although completion of the Ashuganj plant is now scheduled for 1980, the study will have been completed in 1977.

The Ashuganj Study was contracted on May 28, 1976 by the Bangladesh Agricultural Development Corporation (BADC) to the associated firms of the Economist Intelligence Unit (EIU), Carl Bro International A/S and Operations Analysis A/S (the Consultants). The terms of reference are set forth at Annex B.13. Essentially the Study is directed to development of a plan through 1985-86 for the storage, transport and organization necessary to ensure the efficient marketing and distribution of fertilizer. The Study is comprehensive and expected to be the principal vehicle for improvement of the Bangladesh fertilizer marketing and distribution system. The Interim Report of the Ashuganj Study (the Interim Report) was completed in January 1977 and is now under discussion by the Consultants with BADC. The conclusions and recommendations of the Interim Report are necessarily tentative and incomplete and are not required to be submitted to the lenders. Once review of these findings has been completed with BADC, the Consultants will proceed with the work under Phase II. This phase will confirm or revise the conclusions and data developed under Phase I and will contain a full economic appraisal and cost benefit analysis of the storage system, a sensitivity analysis of the demand projections, assessments of warehouse capacity, substitution of seasonal demand for standard turnover ratios, consideration of phasing out hired warehouses, examination of multipurpose storage possibilities, determination of unit sizes and final recommendations regarding bulk handling.

3/ FY 1975 AID Loan 388-T-003 for $30.0 million to assist in financing construction of a 528,000 MT per year urea fertilizer plant.

4/ Section 5.05(b) of AID Loan Agreement 388-T-003 for the Ashuganj Fertilizer Project. The requirement is also included in other lender agreements for the Ashuganj Project.

The preliminary conclusions set forth in the Interim Report are comprehensive and far reaching for the distribution system from manufacture or procurement to the point of sale to farmers. The agreed process for lender review and agreement on the recommendations of the Ashuganj Study precludes making recommendations or imposing conditions at this point, even if it were not, as it is, the better substantive course to await the final report.

3. Scope for Improvements - FY 1977 AID Project

It is appropriate that AID (at least as a major source for financing of fertilizer imports) should seek reasonably soon after completion of the Study the implementation of those facets of the program which address the fertilizer system generally, as opposed to the particular needs deriving from the start-up of the Ashuganj plant (i.e., if the total program is not in fact implemented as is expected soon after completion of the Study). Within the limits of that criterion it should be possible to secure the implementation of such a program without impinging on the prerogatives of the Ashuganj lenders as a group, and without appearing to preempt the options which may be available both to the Government and the lenders as the Study is finally completed and the resulting program developed.

Taking into consideration, therefore, both the current timing for completion of the Study and the proposed scope of the FY 1978 AID Fertilizer Distribution Improvement Project (including as components not only continued funding for imports but also construction of additional fertilizer storage, installation of a bulk handling facility at Chittagong, also possibly a granulation unit, training for BADC personnel and perhaps technical assistance), the broader range of changes now under development for the fertilizer marketing and distribution system will be more appropriately addressed in context of the FY 1978 project.

The present project therefore looks to those immediate short-term improvements in the fertilizer distribution and marketing system which can reasonably be implemented without prejudice to the broader recommendations of the Ashuganj Study and which are supported by the experience or findings of the Mission without respect necessarily to the work reflected in the Interim Report.

4. FY 1976 Pilot Distribution Program

The changes in the system which are incorporated in this FY 1977 project reflect the conduct of the pilot distribution program carried out for the past year by BADC in cooperation with the Mission. A description of the pilot program, a chronology of its implementation, an analysis of

the results and the recommendations reasonably supported by those results is set forth at Annex B.10. Briefly, the pilot addressed improvement in distribution and sale of fertilizer at the level of the farmer, the point of consumption. Items tested included a flexible price mark-up to dealers to provide a greater profit incentive, the right on the part of farmers to buy small amounts directly from the BADC thana warehouse, establishment of a reserve stock at thana or intermediate level, the right of farmers to buy from any dealer, and a limited testing of open dealerships. A further component was later added to permit dealers to sell at the local "hats" or markets, i.e., away from their own shops. The application of the pilot findings to the conditions for the project is discussed in detail in Part III.A below.

The discussions conducted with BADC in preparation of this project paper included the suggestion that an additional pilot be conducted, on perhaps a division basis, in which all requirements for dealer licensing would be abolished and anybody would be permitted to purchase fertilizer at set wholesale prices and sell it anywhere at any price. BADC was unwilling to accept this proposal for several reasons. First, they considered that the proposition of abolishing dealer licenses was counter to all of their efforts to build up a professional dealer force which they pointed out was recommended by the Interim Report. Second, they were very strongly opposed to lifting price controls at the retail level which they hold to be essential to guarantee a reasonable price to the farmer. Third, they simply did not want to proceed with another donor-actuated pilot at a time when during the coming year all these questions will be addressed in a broader context by the Ashuganj Study.

5. Fertilizer Offtake Projections

Several principal points should be made with respect to the projections set forth at Annex B.1. These have been developed by the Mission and are lower than previous Mission projections as well as those of other earlier sources. Compared with the Interim Report projections they fall about in the medium range (see Annex B.2) and they are far below BADC projections (see Annex B.3). Compared to each of these estimates and the record of actual offtakes, the Mission projections provide a reasonable basis for gauging requirements over the next three years. The stock and delivery requirements are discussed under Part III.A below but briefly they include a buffer stock of six months supply, i.e., three months in storage at the thana level and three months in the internal pipeline. This is expected to be sufficient to cover delays and internal movement and storage constraints as well as to prevent the shortage created syndrome of blackmarkets and hoarding. In 1974 and 1975 the blackmarket

price of fertilizer was four to five times above the legal retail price and smaller farmers were simply unable for lack of resources to secure fertilizer. Dealers were making exorbitant profits and stock was not reaching the farmers. These were conditions reflecting shortage, and where there is a shortage of fertilizer in Bangladesh or anywhere else the system however well operated will tend to break down. Such a shortage provides the incentive to dealers to hoard and charge black-market rates to the penalty of the small farmer who has the least resources to buy at such prices. The principal loser in such a situation is the economy, with a loss of confidence in the system, a reduction in actual fertilizer use and a brake placed on expansion of food production.

By contrast, during the past 1975-76 crop year, there was an abundance of fertilizer in the country. The blackmarket disappeared and all field reports over the past year confirm the availability of fertilizer and the holding of reasonable prices at or close to the official prices. The result has been that,notwithstanding a decline in crop prices and a reduction of fertilizer subsidy, bringing an increase in price to the farmer, fertilizer sales have increased during the past year.

A principal point of the Mission projections therefore is to maintain an optimum level of supply, between the shortage of 1974-75 and the excess of this past year, which is not so high that the storage and movement system cannot accommodate it efficiently, but high enough to ensure the general availability of fertilizer throughout the country at reasonable prices. Accordingly these projections, which are an extension of previous actual offtake experience, also reflect an estimate of that level at which the system can provide fertilizer countrywide at reasonable prices.

B. Detailed Description

1. The sector goal to which this project contributes is an increase in national foodgrain production in the 1978-79 and 1979-80 crop years. Measurement at the end of that year and during the year will be through Bangladesh Government statistics prepared by the Ministry of Agriculture, BADC and the Central Bureau of Statistics. This will be coupled with joint AID-Government evaluations and AID field surveys. The goal will be achieved with a three percent increase in food production.

2. The project purpose is a growth in fertilizer sales on an equitable basis. This is accomplished principally through adequacy of supply, making fertilizer available in sufficient quantity so that all farmers have access throughout the country. (See Part III.B Financial Analysis.)

3. The end of project status should see an increase in fertilizer sales in 1978-79 and 1979-80 of at least six percent over the levels of the immediately preceding crop years.

4. Project outputs will include continued adequate supply of fertilizer at the local level and increased incentives to dealers.

5. The Bangladesh Government inputs will include costs of local fertilizer procurement, salaries, the quantity discount test (possibly through revenues from fertilizer sales), training and other operations of BADC. For this purpose the Bangladesh Government will provide a local currency budget of an estimated $87.8 million equivalent to meet the 1978-79 costs of procurement, transport, marketing, storage, distribution, promotion and inspection, and all BADC overhead expenditures connected with the sale of fertilizer. Included also will be the cost of inland transport for the AID financed fertilizer. The Bangladesh Government costs will be offset by an estimated $20.0 million equivalent in revenues from the sale of imported (donated) fertilizer.

The AID inputs include a grant of $27.50 million to finance procurement of approximately 119,000 MT or urea and TSP, or other input requirements as may be agreed to by AID, equipment and related services, and a portion of BADC training costs. The grant will finance the costs of purchase, related insurance and ocean freight.

6. The relationships between the inputs and outputs and the project purpose rest on the principal assumptions that:

a) fertilizer supplies will meet demand;

b) adequacy of supply will result in availability of fertilizer throughout the country; and

c) adequate supply will permit all farmers, including small farmers, to have access to fertilizer at reasonable prices, although their ability or the profitability of doing so may be limited or non-existent (see Financial Analysis and Social Analysis).

The national goal of the agricultural sector in Bangladesh is to achieve foodgrain self-sufficiency. The Government's official figures show an annual increase in the population of 2.8 percent. Foodgrain production must grow faster than the population to achieve the national goal but

historically it has been extremely difficult for developing countries such as Bangladesh to achieve production increases greater than 3-3.5 percent. Although the Mission believes that a one percent increase in foodgrain production will be the direct result of the increased fertilizer use during this project, it would be an impossible task to document or trace this. Further, we recognize that production changes often may correlate more closely with climatological factors than with fertilizer utilization. Also increased fertilizer usage must be associated with improved seed, better cultivation practices, increased irrigation and control of disease to maximize benefits. Therefore, a production growth rate of three percent has been selected even though it represents only a modest step toward foodgrain self-sufficiency.

III. Project Analysis

A. Technical Analysis

1. Fertilizer

Fertilizer use in Bangladesh from 1962-63 through 1975-76 grew from 73,000 MT to 458,000 MT per year. This represents an average increase for all fertilizers over the 13 year period of over 600 percent. The most important fertilizer used in Bangladesh has been urea which throughout most of the period accounted for at least 70 percent of total fertilizer sales. TSP was a later entry, but since 1970-71 has represented about 25 percent of BADC fertilizer sales. The third main fertilizer is MP, which has remained stable at approximately five percent of total fertilizer sold. Overall growth during the total period 1962-63 through 1975-76 was relatively continuous with a significant drop over a preceding year in only two years, i.e., 1971-72 as a result of the Liberation War and 1974-75 following the Ghorasal urea factory explosion. Hyperphosphate and NPK have been introduced in Bangladesh only recently and have had little impact so far, accounting for only three percent of total sales in 1975-76. The analysis in this project therefore is limited to the main urea, TSP and MP components of fertilizer use.

The Interim Report concludes that the movement from the present average NPK ratio of 2.7:1:.28 to a more productive ratio of approximately 2:1:.5 may be achieved by 1985-86. However, this is a prediction of the likely national average and is not to be taken as the ideal. As can be seen from Annex B.5, the recommended application rates vary but they tend to cluster more closely around 1.25:1.0:0.65 as an average. This would suggest that the use of TSP and MP needs to be increased considerably.

The Interim Report recommends that the marginal economic advantages of direct application of ground rock phosphate over TSP do not at present appear sufficient to offset the problems limiting the acceptability of ground rock to the Bangladesh farm market. The Report also notes that the large scale introduction of compound fertilizers to Bangladesh still remains to be evaluated.

Since the mid 1960s the average intensity of fertilizer use in Bangladesh has increased by about four times, reaching 19 pounds of nutrient per net cultivated acre in 1975-76. This increase has been closely associated with the expansion of low lift pump irrigation, the spread of high yield variety (HYV) boro (dry season and thus irrigated) rice, as well as the spread of rain fed HYV rice for the aman and aus crops. According to Bangladesh Ministry of Agriculture statistics, HYV rice now represents about 13 percent of the cropped area and about 30 percent of the total production. 5/ The use of fertilizer on HYV cereals (rice and wheat) is estimated at an average of 70 nutrient pounds per acre, which suggests that the intensity of use for non HYV areas is only about $7\frac{1}{2}$ pounds per acre. This indicates fairly clearly that the increase in fertilizer consumption since the mid 1960s has been mostly by HYV growers.

The HYV growers used an estimated 59 percent of the fertilizer sold in 1975-76. The highest average intensity use is on the HYV boro rice crop which also requires pump irrigation. The boro is at the same time particularly responsive to fertilizer. Also, given the reliability of irrigation, the use of fertilizer for the boro carries a lower technical risk than is the case with the rain fed varieties. Use on HYV aus is increasing as well, which may reflect a carryover of irrigation availability from the winter season. The rain fed aman crop, particularly the broadcast aman, has a much lower use of fertilizer and in some cases none at all is used. This may be due to the higher likelihood of crop damage in the monsoon season. There are three principal annual phases for fertilizer sales corresponding to the cropping seasons: the aman from July through October, the boro from November through mid March and the aus from March to June. There is also some overlapping of these seasons. See cropping calendar at Annex B. 8

5/ HYV acreage may be overstated according to the 1976 HYV Aman Task Force Report, Ministry of Agriculture, Dacca, January 1977. This report suggests that HYV acreage during the aman season seems to have decreased by 5 to 15 percent for the country as a whole. There is a general tendency to over-estimate in the Districts. The report also stated that the variety Pajam, up to 1975, was reported as HYV. Following the suggestion of IRRI, the variety was dropped from HYV lists starting with the 1976 report. According to the report, Pajam occupied the greater part of what was considered HYV aman acreage in the Chittagong Division and some parts of the Dacca Division.

A number of projections for use of fertilizer in Bangladesh have been developed over the past five years. These include the projections of the World Bank Land and Water Resources Sector Study (1972), the World Bank report Bangladesh, Development in a Rural Economy (1974), the FAO Perspective Study of Agricultural Development for Bangladesh (1974), the TVA report Bangladesh Fertilizer Situation (1974), the Asian Development Bank Bangladesh Energy Study (1976), as well as the projections of the Bangladesh First Five Year Plan (1973) and projections of the Bangladesh Ministry of Agriculture, Accelerated Cereals Production Project: Project Digest (1975). Projections were also developed by the AID Mission both for the FY 1976 agricultural inputs project as well as for the TQ fertilizer storage project. Finally, BADC has recently revised its projections, the Ashuganj Study has developed a set of high, medium and low projections, and this Mission has prepared a set of projections in context of this project. These three most recent projections take into account the earlier projections but are based on more current data. They are included at Annexes B. 1, 2 and 3 and are discussed below.

The current Mission projections, which are lower than the previous Mission projections and the other earlier projections, are contained at Annex B. 1. They are a simple projection of the past offtake trend, on a straight line basis into the future. In order to obtain the best analysis, regression was applied to sales using all of the past years from 1964-65 to the present excluding those years in which unusual supply constraints obviously depressed sales far below demand. When this analysis was performed it was found that past sales have adhered very closely to the regression, so close in fact that their correlation coefficient is 0.99 (a correlation coefficient of zero means no correlation at all and one of 1.0 means perfect correlation with all points falling on the line). From this it was clear that effective demand for fertilizer has been very much a straight line growth.

This past trend is taken in the context of the overall fertilizer usage position of about 19 pounds per acre as opposed to overall recommended usage rates in the range of 200 to 300 pounds per acre in Bangladesh and actual usage rates in the U.S. from 300 to 400 pounds and up per acre. This,coupled with the trend plus what is known about all of the efforts under way to increase fertilizer use, indicates that fertilizer use will not remain static or decrease, but will continue to

increase. The question is increase at what rate? The increase might be at a certain percent per year (i.e., a compound growth) or it might be more along a straight line - constant rate of increase (i.e., decreasing percentage increase every year). The Mission's projections select the second of these two alternatives as the more likely, in view of the high correlation of past trends with straight line growth and the absence of any indication of a rising curve in demand growth.

The actual use of fertilizer is dependent upon a large number of variables some of which can be quantified and some of which cannot. The inter-relationships of such variables would require a most complex equation if it were to be applied to predict fertilizer demand, the accuracy of which would still be qualified by the fact that it nonetheless remains a projection of the future, always a basic unknown.

While the Interim Report does not present such an equation, it does move in this direction in considering fertilizer demand as dependent on numerous variables on a thana by thana basis. While it does this however in fairly elaborate form, the Interim Report is constrained by the fact that the variables which it is using to predict fertilizer demand (HYV, irrigation prices, institutional factors, etc.) are unpredictable themselves. This has led the report to predicate demand under high, medium and low options, all of these options increasing at a compound rate. With respect to this method (explained in more detail in Annex B.2), the AID projections provide a valuable comparison and check. The Mission's projections compare with those of the Interim Report (IR) medium projections as follows:

Table 1

Comparison of AID's Annual Fertilizer Offtake Projections with "Medium" Projections in Ashuganj Study Interim Report (IR)
(000's MT)

	Urea		TSP		MP	
	IR	AID	IR	AID	IR	AID
1977-78	371	375	144	131	37	28
1978-79	402	398	161	139	45	30
1979-80	437	421	180	148	56	32

Here it is seen that if past offtake trends continue on the same highly consistent straight line course they have followed for the past 13 years, they will be somewhat below the Interim Report medium trend for the next few years. (In future years the spread progressively widens.) The Mission projections are higher for urea only in the first year, and they are lower for both TSP and MP in all years. Considering that it is expected that the entire commodity component of the AID grant will be TSP, the above comparison is favorable to the project. Compared to the BADC projections, the Mission projections are much lower. (See Annex B.3.)

The AID contribution of 119,000 MT of urea and TSP will meet about 11 percent of the 1977-79 AID projected offtakes and only about 33 percent of the AID-identified total fertilizer import requirement for the same period. This is below the historical AID average of providing 40 percent of fertilizer imports and will be re-examined in the context of the FY 1978 project. The importance of the timing of these imports is clearly illustrated in Annex B.4 Import Requirements to Maintain A Six Month Buffer Stock (AID) together with Annex B.7 Anticipated Fertilizer AID by Other Donors. Assuming a six month period between beginning the ordering process and arrival of the fertilizer, the following amounts will need to be ordered:

Table 2

Schedule of orders required to maintain a six-month buffer stock of TSP and urea

Date of Order	Date of Arrival	Urea MT	TSP MT	Total Dollar Amount ($Millions)
12/76	6/77	39,000	-	9.56
3/77	9/77	39,000	-	9.56
6/77	12/77	39,000	-	9.56
9/77	3/78	39,000	2,000	9.74
12/77	6/78	39,000	23,000	13.73
3/78	9/78	35,000	39,000	15.81
6/78	12/78	29,000	8,000	8.48
9/78	3/79	12,000	14,000	5.54
TOTAL		271,000	86,000	81.38
Less other donors		200,000	38,000	55.22
Balance Required		71,000	48,000	26.16

See Annex B.7 for details of known commitments made by other donors as of July 31, 1977. The urea figures in Table 2 above through 9/78 arrivals reflect the donation by Saudi Arabia. Beginning in 9/78 (with initiation of ordering required in 3/78) urea from other sources will be required as well. With regard to TSP, although scheduling of 38,000 MT to be provided by other donors 6/ is not yet available, 2,000 MT would have to arrive in 3/78 (ordered in 9/77) in order to maintain a six month buffer stock in-country.

As Table 2 indicates, the total import requirement amounts to 357,000 MT for which orders need to be placed by September 1978. Of this total 238,000 MT will be met by other donors, leaving a requirement of 119,000 MT sill to be provided. Orders for this quantity need to be initiated beginning possibly in September 1977 for TSP with ordering spaced possibly into the third quarter of calendar year 1978.

As the table at Annex B.4 indicates, the fertilizer import arrivals requirement over the crop years 1977-78 and 1978-79 amounts to 356,000 MT. This project for $27.50 million undertakes to provide just over one-third of this requirement.

Timing of arrivals under this project will be such that while the FY 1978 project is under preparation, the Mission will be able to confirm whether the projections developed for this project prove in fact to be an accurate basis for the FY 1978 project. All indications at the moment are that they will be.

In the event that other donors (notably the Saudis) in the near term commit themselves to financing of urea from mid-1978 onward during the 1978/79 crop year--obviating the need for AID financing of this fertilizer--AID will of course redirect its attention to financing of TSP alone. The effect of this action would be to stretch out grant disbursement into calendar year 1979 before the FY 77 grant is fully drawn down. It should be noted that this may reduce the level of fertilizer financing anticipated in the proposed FY 78 Fertilizer Distribution Project. A much firmer determination of this eventuality will, however, be made by the end of Calendar year 1977 and in any case well before consideration of any FY 78 grant.

In perhaps the worst case alternative, fertilizer offtakes might become frozen for the term of the project (i.e., through the 1978-79 crop year) at the same monthly levels as occurred during the last 12 months (April 1976 to March 1977). In such an eventuality there would be a delay of no more than three months in the first order and up to ten months in the final order under this project. Such a combination

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6/ The Netherlands (12,000 MT), Norway (11,000 MT) and Japan (15,000 MT).

of circumstances, however, with offtakes being frozen for more than two years is considered highly unlikely. The alternative of not providing funding soon enough to avoid the possible consequences of a fertilizer shortage with all of its effects on production, black-market prices, etc., is considered potentially a much more damaging risk.

The assumptions with respect to the projections include an average annual domestic production of approximately 360,000 MT of fertilizer including 300,000 MT of urea from the Ghorasal and Fenchuganj plants and approximately 60,000 MT of TSP from the Chittagong plants.

TSP production of 60,000 MT is considered reasonable based upon the previous record, current conditions and a realistic appraisal of the future short-term prospects. Although TSP plant No. 1 with a capacity of 32,000 MT per year has finally just been put into production, it is unclear whether production will reach that level. (Production in the first three weeks of operation was only 250 MT and spare parts are in short supply.) TSP plant No. 2 with a capacity of 106,000 MT has yet to achieve anything above 50 percent of capacity.

For urea, design constraints on the Ghorasal plant effectively limit the facility to about 250,000 MT of production a year, or about 70-75 percent of rated capacity. Some temporary increase may be possible, but it is equally possible that production may decline. The Ghorasal plant is now down for unscheduled maintenance with no definite date for coming back on line. The Fenchuganj plant at about 50,000 to 60,000 MT production per year operates at only 50 percent of capacity. There are plans to put the plant under a program of modernization once agreement is reached between the Bangladesh Government and the Government of Japan, and while that should result upon completion in an increase of production to about 85,000 MT a year, it will also mean that the plant will be out of operation for some six months or longer. The modernization is expected to get underway sometime in 1977, which would effectively mean curtailment of Fenchuganj production for a period during 1977 and 1978 affecting the 1978-79 crop year with which this project is concerned.

To take the present crop year as an example, the obligation of BCIC to provide fertilizer from both urea plants to BADC for the 1976-77 year totals about 300,000 MT of which 194,000 MT was produced from July 1976 through February 1977. This means that in the remaining four months of March through June, BCIC must produce 106,000 MT of urea. But with the Ghorasal plant closed from March through mid-May, it appears unlikely the goal will be met considering that the Fenchuganj production for a four month period is estimated at 22,000 MT. In any case, the present situation provides little assurance for BADC which must be able to count on that minimum level of domestic supply.

Accordingly, based on an assessment of both the urea and TSP manufacturing facilities, and on discussions with both BCIC and BADC, an estimated 360,000 MT combined production per year appears a prudent figure. This is consistent with the figure accepted by the Interim Report.

Two additional points need to be recorded about the fertilizer to be imported. First, it should be in granular form, especially TSP. Granular TSP as opposed to the powdered TSP produced locally is much preferred by farmers because of its greater ease of application and durability in storage.

Second, BADC has agreed that the AID-financed fertilizer should be bid both for 25 kg bags as well as for the traditional 50 kg bags. As BADC and Mission field surveys have confirmed (see Annex B. 10), and as also is recommended in the Interim Report, the 50 kg bags lead to considerable loss in handling through the use of hooks and other breakage. They also represent too large a size for average farmer purchase. 25 kg bags are admittedly more expensive, but the advantages in handling, reduction in fertilizer loss and convenience to buyers may outweigh the additional costs. This needs to be evaluated however on the basis of firm price offers. Import will be in bags; the question of importation of fertilizer in bulk is now under study for inclusion in the FY 1978 project.

2. Non-Fertilizer

In addition to fertilizer, the project includes the following:

a. Two Tier and Quantity Discounts.
b. Observation Training for BADC Officials.
c. Dealer Training; and
d. Equipment, Materials and Related Services.

a. Two Tier and Quantity Discounts

For a discussion of the two tier system see Part III A. 3 below.

The idea of quantity discounts is one which was put forward by BADC officials during the March 8-10, 197' National Workshop on "Fertilizer Distribution and Marketing at the Small Farmer Level" sponsored by BADC and FAO at BADC's Madhupur Staff Training Institute. 7/ Following the workshop and additional discussion of the idea within BADC and in the Mission, the proposal was then made that the idea be tried out on a one year pilot basis funded by BADC possibly from the proceeds of fertilizer sales. This remains to be worked out by BADC with the Government. The trial will be on a one year (targeted to begin during crop year 1977-78) basis in one or more districts, and actual implementation will follow selection of the district(s) as well as a determination of the quantity (quantities) at which the discounts will be effective, and the amounts or scale of the discounts to be applied.

7/ See at Annex B. 14 draft recommendations of the National Workshop.

Mission field surveys as well as the findings of the Interim Report of the Ashuganj Study show that most fertilizer dealers are not professional or single product dealers. They are usually small general shopkeepers who sell a variety of other goods such as food, pots and pans, paper, lumber, etc. Often the dealer is a farmer himself who has become a dealer in order to get the wholesale price for his own fertilizer and perhaps for a few of his neighbors. The Interim Report concludes "The average annual sales of fertilizer retailers amount to some 25 tons..." On an average margin of approximately Tk 120 per MT (average current Government discount), this would mean a gross margin Tk 3,000 and (according to Interim Report figures)a net profit somewhere between Tk 500 and 600 per annum ($33 to $40 per annum). If fertilizer losses are considered, the Interim Report estimates that an annual loss of Tk 300 may occur for the average dealer.

Furthermore, the operations of the average dealer are far from efficient. Most dealers have very small storage facilities and indeed many operate directly from their houses. Therefore, stocks on hand are usually very limited and often a dealer carries no appreciable stock at all. Another aspect is the very small quantity purchases normally made by most dealers. It appears from the pilot that most common dealer purchases fall between two and five maunds. The Interim Report estimates that dealers purchase less than 10 maunds at a time in the low season(s) and 10 to 20 maunds at a time in the peak season(s). Also, that while the large dealers sometimes purchase as much as 50-60 maunds per trip in the peak season, these dealers are thought to represent a very small percentage. The Interim Report findings also parallel those of the pilot.

The purpose and intent of quantity discounts in this project is to provide additional incentives to the dealers. Preliminary discussions with BADC have indicated that the quantity discount will be at a fixed per maund rate for dealers who exceed a certain sales level to be determined by study. Both the discount amount and minimum sales level may differ in the several test districts in order to obtain information on

the effectiveness of the incentive at different levels and for different quantities. The costs of the quantity discount will be paid by BADC, possibly through revenues from fertilizer sales. Upon completion or at any earlier point when the test results are sufficiently developed, these will be jointly evaluated by AID and BADC. The findings of that evaluation with respect to the discount will then be considered for inclusion by BADC in its general program.

The effect of the quantity discount is expected to be an increase in the income and profitability of fertilizer dealerships with a parallel increase in the quality of dealer operations resulting in higher sales. The inefficient dealers are expected to drop out of the business except for peak seasons or perhaps entirely because they will be unable to compete with the more efficient dealers who (obtaining the quantity discount) will be able to undersell them. The Mission and BADC will also evaluate the trial, particularly the extent to which, or whether, such discounts serve to limit competition.

If it is assumed that on the average the quantity discount is equal to Tk 1.0 per maund, then a dealer selling 200 MT in excess of the minimum per year would be able to make an additional profit of approximately Tk 5,364. Compared to the average dealer's present net profit of from Tk 500-600 per year, as noted above, this would have considerable incentive impact.

An efficient dealer under this system could thus be headed on the road to becoming a wholesaler, eventually displacing BADC at thana level, although this goal would be a long way off. For the present it is a sufficient step that the dealers be capable of concentrating principally on fertilizer dealerships at the union level, of owning adequate shops and storage facilities, of maintaining an adequate and ready stock for sale, and of being motivated to promote fertilizer sales to farmers.

b. Observation Training for BADC Officials

A number of ideas have originated in and are circulating within BADC concerning how to perfect and evolve the fertilizer distribution system. (See as an example draft recommendations contained in Annex B. 14.) A related matter, BADC has suggested that some observation training [illegible] rby countries (India, Sri Lanka and possibly Thailand or the Philippines) might be very advantageous in collecting additional ideas on fertilizer distribution and marketing to apply to the Bangladesh situation. Consequently,

such a provision is included in this project. An estimated 30 days including per diem are contemplated for approximately six key BADC officials.

One person each from the Mission Agricultural and Capital Development Divisions will work with BADC in developing plans and will accompany the BADC officials.

c. Dealer Training

Nationwide there are approximately 18,000 active fertilizer dealers, which is about four times the number of extension agents. The fertilizer dealers, considering their daily contact with farmers, are perhaps the most potentially effective extension and promotion agents available for fertilizer. The proposition of training dealers in the types of fertilizer, usage and recommended application rates with respect to crop and season, etc. is sound.

BADC has established a committee to develop a plan to accomplish this, and the chairman of that committee has met jointly with the AID Mission and FAO to request assistance. Many of the basic materials on fertilizer types and their uses and recommended application rates are already available at BADC. But they are in very limited quantities and require updating and revision to form an effective package for dealer training. It has been decided that the best approach is for BADC to develop materials and a curriculum with the assistance of FAO. These will be designed first for training of the BADC thana inspectors who will in turn train the dealers.

Dealer training will last for about three days and will take place at such places as the district headquarters.

The costs of the program have been estimated at $100,000 equivalent ($60,000 equivalent in dealer's per diem at Tk 50 each and $40,000 equivalent for printing of materials). These costs will be shared on a matching basis, 50 percent by AID and 50 percent by BADC.

d. Equipment, Materials, and Related Services

The Madhupur Institute which is to serve as a basic training institute for all of BADC staff has just been established and has almost

no equipment or library. In addition BADC has no laboratory for testing of fertilizer for demonstration or quality control purposes. It is proposed partially to meet these needs under this project as a precursor to the more comprehensive effort of the 1978 project. To the extent that these needs cannot be identified adequately by the Mission, BADC and the FAO warehousing team (which has committed itself to assist in this area), it may be necessary to contract for short-term consultant or technical services to identify the material and equipment needs.

The projections at Annex B. 1 were developed using an inexpensive pocket calculator. The method used was explained to the BADC officials responsible for developing the internal BADC offtake projections, and as a result BADC revised its own figures downward though they still remained higher than the AID projections. (See Annex B. 3.) BADC has expressed a strong interest in being able to develop the same type of analysis and therefore two of these calculators are included in the project. The AID Mission will present them to BADC and train BADC officials in their use.

The total cost of all the above items is estimated at not to exceed $40,000.

e. Summary

The non-fertilizer components of the project may be implemented any time after the project agreement has been signed. The quantity discount trial will begin as shortly after signing of the project agreement as possible. Therefore, the test will be carried out beginning in the 1977-78 crop year, with the results then applicable at some point in the 1978-79 year when the fertilizer provided under this project is expected to be distributed. Similarly the third country and other training, and the equipment and other materials, will all be timed most advantageously as soon after Grant authorization as possible.

3. Features Deriving from the Fertilizer Distribution Pilot

The six changes in the system deriving from the fertilizer distribution pilot mentioned in Part II.A. above (more fully described in Annex B. 10) which will be incorporated in this project are as follows:

a. Simplified Distance Discounts

The current system of providing increasing discounts to dealers zero to three miles, three to six miles, six to nine miles and above nine miles from the thana warehouse will be replaced with a new system providing discounts in only two categories of distance from the thana warehouse: (a) from zero to six miles, and (b) above six miles. This innovation will allow for increased competition between larger numbers of dealers as it reduces the number of distance categories into which dealers are segregated countrywide. Standard retail prices to farmers will prevail at Tk 60 per maund for urea, 48 for TSP and 40 for MP.

Table 3

Two Tier Distance Commission System

Miles Distance	Commission	Takas Dealers Pay BADC For Urea	TSP	MP
0 - 6	Tk. 4	56	44	36
Over 6	6	54	42	34
Standard retail price		60	48	40

This compares to the old system as follows:

Table 4

Four Tier Distance Commission System

Miles Distance	Commission	Takas Dealers Pay BADC for Urea	TSP	MP
0 - 3	Tk 3.5	56.5	44.5	36.5
3- 6	4.0	56.0	44.0	36.0
6- 9	4.5	55.5	43.5	35.5
Over 9	5.0	55.0	43.0	35.0
Standard retail price		60.0	48.0	40.0

The new system retains the price control which BADC feels is essential to prevent distortion in the price of fertilizer, with escalating results, as in the past, while at the same time introducing nationwide the same competitive flexibility which was observed operating in the pilot. At the same time it reduces the complexity of the distance discounts by reducing the number from four to two, but still retaining an incentive to dealers to supply more distant areas, where the transportation costs are higher. Finally, except for dealers living in the 3-6 mile range, the adoption of the two tier system means an absolute increase in discount over the previous system for all dealers. This will provide additional incentive to the dealers and it will also mean additional expense for the Government (perhaps $ 1 million equivalent). The Mission and BADC will evaluate the extent (if any) to which the dealers maximize their profits by concentrating sales at points zero and six miles.

b. Optimizing the Number of Dealers

During the pilot year the number of authorized dealers was increased from nine to 15 for each union. BADC will now reassess the whole question of the optimum number of dealers per union, taking into consideration the development of a sound private sector dealer network, including addressing such factors as adequate profit, sufficient competition and coverage of all areas. BADC for example will examine the dealer roster on a periodic basis (probably yearly) and revoke the dealerships of those who have not achieved a certain minimum sales volume. Further, BADC will take steps to remove such remaining hindrances as prior police certification for dealer appointments, although proof of residence in the union will still be required. The basic principle to be applied is to reconcile the need for an efficient dealer system with entry as open as possible for those who want to become dealers. The Mission and BADC will evaluate the extent to which the increasing number and changing types of dealers improve the general availability of fertilizer or result in lower price to farmers.

c. Most Convenient Godown

BADC will change its procedures so that dealers may choose the thana warehouse from which they purchase their fertilizer. Under this provision , a dealer may select a warehouse in an adjacent thana. This will allow some dealers considerable savings in transportation cost in cases where the thana warehouse in an adjacent thana happens to be closer to the dealer's union. The distance discount allowed in such cases will be based upon the distance from the dealer's union to the warehouse

where he purchases. He will, however, continue to be required to pick only one warehouse and purchase only there, and to sell fertilizer only in the union in which he lives. The Mission and BADC will evaluate the extent to which dealers actually operate only in their home areas.

d. Direct Retail Sales from the BADC Thana Warehouse

This provision of the pilot will be applied to the countrywide program and for the same purpose. It will be in place as a protective device to provide an alternate source for farmers to buy fertilizer at the BADC approved retail level should dealer prices go too high or there not be a satisfactory hat market in a given area. Thus, farmers will have several retail sources from which to buy -- the dealer shops, hat markets, and the thana warehouse. Farmers may frequent any union or thana source. The minimum purchase will be one whole bag of the smallest size available (25 kg or 50 kg) but there will be no upper limit.

e. Hat Sales Promoted

Hat (village market or bazar) sales in the unions countrywide will be encouraged. BADC district and thana personnel will monitor the hats and ensure that fertilizer is available to farmers from this marketing source. A dealer may only sell at hats in his union and distance category but farmers can purchase from any hat anywhere. The Mission and BADC will evaluate the extent to which dealers at hat sales are in their home areas.

f. Open Purchase

Farmers may buy from any dealer, anywhere, whether in a farmer's own union or thana or not.

4. Environmental Assessment

With respect to the environmental implications of the project, as presently contemplated, the major components of the project will be TSP and urea. The environmental assessment is included at Annex C.

Bangladesh has a land area of 33 million acres of which about 22.5 million acres are cultivated. The application of fertilizer will increase the yields per acre, raising production rates which are among the lowest in the world. The use of fertilizer will thus have a beneficial effect; there will be virtually no significant adverse effects on the land or in the water and none on the air environment. The beneficial effects of the application of fertilizer to the crops of Bangladesh far outweigh any potential adverse effects.

5. Summary Technical Analysis

Based on the foregoing discussion, it is concluded that the project is technically sound, includes a reasonably firm cost estimate, and reflects the necessary planning, both in selection of the type and timing of project components and in the plan for execution of the project. On this basis, the project meets the requirements of the Foreign Assistance Act, Sections 611(a) and (b).

B. Financial Analysis and Plan

1. Analysis of the Financial Effect on Project Participants

The purpose of this analysis is to assess whether the intended recipients of the project, i.e., Bangladesh farmers, will have sufficiently high financial incentives to participate in the project. This analysis is crucial to a definition of ultimate project success since the stated project purpose is growth in fertilizer sales on an equitable basis.

In order to perform an illustrative analysis, we first state some of the underlying growth assumptions. The Interim Report provides a representative set, as follows :

i. the spread of improved cereal varieties;
ii. the development of irrigation facilities;
iii. increases in the average intensity of fertilizer use, representing the combined function of changes in the proportional area receiving fertilizer and in the average rates of application on fertilized areas.

These assumptions mean that the greatest fraction of new demand for fertilizer will occur in areas which can be brought under irrigation water command, pending a technological breakthrough with respect to deep water, and rain fed rice crops. Bangladeshi farmers tend to minimize the technical risk of using fertilizer by applying it heavily to the irrigated boro crop wherein the timely availability of water is assured. For the same reason, the significant growth of irrigated HYV wheat production over time is a common assumption in fertilizer demand projections. These assumptions are well grounded in the historical production trends for aman, aus, boro and wheat. In general the production of aman and aus in crop year 1975-76 was only slightly greater than in 1969-70, whereas boro rice production doubled and wheat production tripled in the same period (refer to IBRD, "Second Grain Storage Project, Pre Appraisal Mission" March, 1977, Annex 1, Table 1).

Increasing intensity of fertilizer usage is grounded upon the assumption of improving input/output price ratios over time as well as farmer education.

Growth "...on an equitable basis" implies that all farmers have equal access to fertilizer supplies. As discussed elsewhere in this paper the improvements to the fertilizer distribution system

which have occurred in the past, those which are intended in Agricultural Inputs III, and the prospective improvements in the FY 1978 Fertilizer Distribution Improvement Project all address this point.

While Bangladeshi farmers appear to have equal access to or opportunity to buy fertilizer, they often do not or cannot participate equally. This is so because of conditions prevailing in the rural society as a whole (see Part III. C Social Analysis) and to agricultural policies in particular. Some of the differentiating conditions are: (a) in general, the actual cultivators of the land are more often Borgadars (sharecroppers, lessees, and renters of various kinds) than farm owner - operators; (b) farm owner-operators enjoy preferential terms of credit; and (c) prevailing output prices favor owner-operators.

Thus, the following financial analyses are conducted on the cost of production for both local variety and HYV irrigated boro as well as for HYV irrigated wheat, and for two primary classes of farmers, Borgadars and owner-operators.

TABLE - 5

Cost of Production of HYV, Local Boro Rice and HYV Wheat - Cultivation by Borgadar (sharecropper)

Assumptions

1. Sharecropping terms assumed to be(a) all input costs borne by the cultivator; (b) 50 per cent of production paid to the land owner as rent.

2. The assumed value of labor and bullock power is Tk 7 per day.

3. Cost of credit from non-institutional sources is to be not less than 100 per cent per annum or 50 percent per crop.

4. Credit is required to purchase seed, fertilizer, pesticides, irrigation pumping and bullock power.

5. Man days, bullock days, yields and other costs are from Table 33, Interim Report.

Borgadar Cultivation

Production cost per Acre (taka)	Recommended practices HYV Wheat	Recommended practices HYV Boro	Farmer's Practice HYV Boro	Farmer's Practice Local Boro
Labor	469	819	714	497
Bullock power	158	116	98	84
Seed	165	34	34	26
Pesticides	20	200	100	100
Irrigation	150	225	180	150
Fertilizer	197	202	97	57
Interest	345	388	254	208
Cost of production (gross)	1504	1984	1477	1122
Production per acre (Mds.)	37	55	45	30
Farmers ½ share	18.5	27.5	22.5	15
Gross cost of production to farmer per mnd.	81	72	66	75
Cost of production per mnd. without labor	56	42	34	42

TABLE - 6

Cost of Production of HYV, Local Boro Rice, and HYV Wheat - Cultivation by Farmer-Owner.

Assumption

1. Farmer owns his own land.
2. The assumed value of labor and bullock power is Tk 7 per day.
3. Cost of credit is from institutional source at 15 percent per annum or 7.5 percent per crop.
4. Credit is required to purchase seed, fertilizer, pesticides and irrigation pumping.
5. Mandays, bullock days, yield and other costs are from table 33, Interim Report.

Owner-Operator Cultivation

Production Cost Per Acre (taka)	Recommended Practice HYV Wheat	Recommended Practice HYV Boro	Farmer's Practice HYV Boro	Farmer's Practice Local Boro
Labor	469	819	714	497
Bullock	158	116	98	84
Seed	165	34	34	26
Pesticide	20	200	100	100
Irrigation	150	225	180	150
Fertilizer	197	202	97	57
Interest	40	50	31	25
Gross cost of Production per acre	1199	1646	1254	939
Production per per acre (mnd.)	37	55	45	30
Gross cost of production to farmer per maund	32.4	30	28	31.3
Cost of production per maund without labor.	20	15	12	14.7

Given a notional price of Tk 74 per maund for HYV boro and Tk 78 per maund for wheat (i.e. present Government procurement prices) and in terms of the analysis presented above, the Borgadar has no incentive to adopt either HYV boro rice or wheat. However, if he can improve on production costs (for example by securing better terms of credit) he might have a modest incentive to adopt HYV recommended practices.

The benefits for the farm owner-operator (under the above analysis) to use recommended inputs on HYV appear to be better . The owner-operator producing HYV obtains an additional 25 maunds yield per acre for increased production costs which are proportionately the same per maund. Therefore, his incentive to use HYV inputs increases in direct proportion to the number of acres he cultivates.

The above examples are illustrative of only four possible financial returns resulting from the total costs of agricultural production in each of the Borgadar and owner-operator situations. As such they are only illustrative and clearly not a comprehensive financial analysis of agriculture in Bangladesh. But they do have clear indicative value of the varying agricultural and financial situations in which Bangladeshi farmers find themselves and of the limited value which increased fertilizer use taken alone may have upon their general condition. Thus, these analyses reduce the clearly favorable impact of fertilizer use taken in isolation, which as can be seen from Annex B.5 is probably (depending on applications rates) at a rate of return from 5 to 10 times its cost to the owner-operator and about half that to the sharecropper (since the sharecropper would have to turn over to the owner one half of the increased yield). The pilot project has shown that there is some use of fertilizer by sharecroppers but it is not known how much. During the course of this project data will be collected to determine the actual usage (see Evaluation Plan).

Many measures which could be taken to address the equitable distribution of the benefits of agricultural production in Bangladesh remain outside the boundaries of this project. These include but are not limited to changing the terms of tenure, improving the terms of production credit (which will be addressed by the Mission's Rural Finance Project beginning in the 1977-78 crop year), increasing output prices at the time of harvest and at the "farmgate", or increasing the public subsidies on all HYV inputs.

2. Recurrent Budget Analysis

BADC's operating budget for all administration expenses is provided from the Government's own revenues. The cost of the fertilizer itself however is another matter. Fertilizer supply comes from two sources: local production and imports. With respect to urea, local production is clearly preferred to import in terms of long term self sufficiency. The reason for this is that natural gas (from which urea is produced) is abundant in the eastern portion of Bangladesh. Two plants, Ghorasal and Fenchuganj, now exist (see above), and AID is one of several donors supporting the construction of a third plant at Ashuganj. When this plant comes into production it is expected to cover local needs until about 1985. A fourth plant at Chittagong is now under feasibility study funded by the Asian Development Bank. This will produce for export until the late 1980s when domestic demand will overtake its capacity.

With respect to TSP, however, the case for local production is not so compelling, because the raw materials will have to be imported in any case. The current costs of raw materials are in fact so high that the Interim Report of the Ashuganj Study has recommended for the next few years no additional construction be planned for TSP production. 8/

The only remaining avenue to reduce costs for TSP and MP imports is to import them in bulk rather than bags. This aspect was the subject of a PRP submitted to AID/Washington in October 1976 and will be addressed in the Fertilizer Distribution Improvement Project for FY 1978.

The recurring budget analysis for imports presents a problem of growing proportions in the sense that as fertilizer use continues to grow there will be a larger need for imports. The Interim Report provides the following summary of the record so far on the proportions of different methods of funding for imported fertilizer:

Grant	:	60 percent
Loan	:	25 "
Barter	:	6 "
Cash	:	9 "

8/ See Table at Annex B. 6.

Over 40 percent of total imports has been provided by the United States, including 419,911 MT of fertilizer and 40,000 MT of rock phosphate. Of these totals, all of the rock phosphate and approximately 52 percent of the fertilizer was provided on a grant basis.

In terms of the above percentages, BADC has improved its funding sources, as all the fertilizer scheduled for import into Bangladesh at present is on a grant basis. There is no guarantee that this favorable climate will continue, but the indications are that all or at least the major part of fertilizer imports will continue to be grant financed at least for the next several years.

In the long run however Bangladesh will always have to import P and K fertilizers, with the only and unacceptable alternative being not to import them at all. The result of such an alternative would be either less food consumed or an increase in food imports. As is shown in Annex B.5, the cost of food imports would be somewhere between 5 and 10 times as great as the cost of fertilizer imports required to grow the same quantity of food. On the brighter side, the Interim Report suggests that if the Chittagong urea plant is in production by the mid 1980s, the revenues from sale of the product overseas will about equal the import requirement for P and K fertilizers at the demand estimated.

3. Financial Budget Tables

a. The Total Project for 1978-79

As discussed under Part III.A above the target period for this project is the 1978-79 and 1979-80 crop years with most or nearly all of the fertilizer to be provided under the project to be used in these years. The budget analysis is applied to the first of these two years.

The total fertilizer offtake requirements for 1978-79 are projected at Annex B.1 to be 397,800 MT of urea, 139,100 MT of TSP and 29,800 MT of MP. Costs charged by BCIC to BADC are Tk 1734 per MT for urea and Tk 4350 per MT for TSP. Import costs are taken at $ 240/MT for urea, $ 190/MT for TSP and $ 145/MT for MP. Using these figures the following total costs of fertilizer imports are calculated for 1978-79.

TABLE - 7

Costs of Local and Imported Fertilizer
Projected to be consumed in
1978-9

		MT	Local Currency	Dollar Amount
1. Urea	(Local)	300,000	520,200,000	34,680,000
	(Imported)	97,800	N/A	3,472,000
2. TSP	(Local)	60,000	261,000,000	17,400,000
	(Imported)	79,100	N/A	15,029,000
3. MP	(Imported)	29,800	N/A	4,321,000
4. Total		566,700		$ 94,902,000

Costs of internal transport, freight, handling, rent of warehouses, depreciation of warehouses, pay and allowances, contributions to overhead and others have been estimated for BADC from 1962-63 through 1975-76 and are contained at Annex B.12. Projecting from these figures, which have shown a steady growth, it is estimated that the non-fertilizer costs of BADC's fertilizer operations will be approximately $ 35,500,000.

The average discounted prices effective July 1, 1976 were Tk. 56/maund for urea, Tk.44/maund for TSP and Tk.36/maund for MP. 9/ Assuming prices were to increase on an average of 10 percent per year to meet inflation and using the AID projections for fertilizer offtake (Annex. B.1), then the Government would receive the following in revenue from fertilizer sales during 1978-79.

TABLE -8

	MT	Local Currency (millions)	Dollars (millions)
Urea	397,800	722	48
TSP	139,100	198	13
MP	29,800	35	2
Total	566,700	Tk 955	$ 64

9/ With the expected change under this project to a two tier discount system as discussed in Part III.A these averages would decline marginally.

A summary of the total costs and revenues for the fertilizer operation of BADC for 1978-79 is then as follows : (in millions)

	Dollar Amount
Total Costs	130
Total Revenues (49 percent)	64
Total Subsidy (51 percent)	$ 66

The above amount of subsidy compares favorably with the historical average subsidy which has tended to range from 50 percent to 60 percent (see Annex B.12). The current rate of subsidy is estimated to be 50 percent by BADC and Mission calculations confirm this. This represents a drop from the rate of 57 percent during 1975-76. The reason for the drop is the increase in fertilizer prices which took effect in July , 1976, and some falling in import prices. The rate will tend to rise with increased costs as long as the price is held fixed. At some point (historically around 60 percent) the Government is expected to increase the prices thus dropping the subsidy back down.

Subsidy can also be determined by an alternative method which perhaps gives a more accurate picture of the true economic cost. Subsidies should be disaggregated to delineate between the amount or percentage of cost break deliberately given the farmer below "cost" and the amount of subsidization which covers less-than-effecient operations of the BADC distribution system and especially BCIC's TSP plant at Chittagong. The first step is to consider each of the three main fertilizers separately, valuing each of them at the best current international tender price per metric ton. Secondly, these figures should be compared with BADC's retail sales prices as given on page 36. Depending upon whether one includes just inefficient domestic plant operations or BADC's associated transportion, storage, and administrative (TSA) costs, the true subsidies to farmers fall somewhere between 35 percent to 48 percent for TSP, 13 percent to 31 percent for urea, and 56 percent to 63 percent for MP. A range is necessary since in the absence of an effective mass-market private enterprise system appropriate or credible BADC transport/storage/ administrative costs are indeterminable. These subsidies appear to be defensible in the Bangladesh context, and show a rational subsidy advantage to phosphate fertilizers which the BDG and AID are trying to actively promote for the purpose of a fertilizer mix between nitrogenous and phosphatic compounds.

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TABLE - 10

SUMMARY COST ESTIMATE AND FINANCIAL PLAN
(US $000)

Inputs	AID FX	AID LC	AID Total	BDG FX	BDG LC	BDG Total
1. Fertilizer	26,160.00	-	26,160.00	-	52,080.00	52,080.00
2. Quantity Discount	-	-	-	-	150.00	150.00
3. Training	10.00	50.00	60.00	-	50.00	50.00
4. Equipment and materials	40.00	-	40.00	-	-	-
5. Operating Costs	-	-	-	-	35,500.00	35,500.00
6. Evaluation Surveys	-	10.00	10.00	-	-	-
7. Contingency	1,230.00	-	1,230.00	-	-	-
TOTAL	27,440.00	60.00	27,500.00	-	87,780.00	87,780.00
Percent of Total	20.80	0.04	20.84	-	66.53	66.53

Inputs	OTHERS FX	OTHERS LC	OTHERS Total	TOTAL FX	TOTAL LC	TOTAL Total
1. Fertilizer	16,662.00	-	16,662.00	42,822.00	52,080.00	94,902.00
2. Quantity Discount	-	-	-	-	150.00	150.00
3. Training	-	-	-	10.00	100.00	110.00
4. Equipment & materials	-	-	-	40.00	-	40.00
5. Operating Costs	-	-	-		35,500.00	35,500.00
6. Evaluation Surveys	-	-	-	-	10.00.	10.00
7. Contingency	-	-	-	1,230.00	-	1,230.00
TOTAL	16,662.00	-	16,662.00	44,102.00	87,840.00	131,942.00
Percent of Total	12.63	-	12.63	33.43	66.57	100.00

TABLE - 12

Costing of Project Outputs/Inputs
($000)

Inputs	Outputs			
	1. Adequate Supply	2 & 3 Dealers Incentives	4 Sharecropper Usage Survey	Total
1. Fertilizer	94,902.0	-	-	94,902.0
2. Quantity Discounts	-	150.0	-	150.0
3. Training	110.0	-	-	110.0
4. Equipment	40.0	-	-	40.0
5. Operating Costs	34,700.0	800.0	-	35,500.0
6. Evaluation Surveys	-	-	10.0	10.0
7. Contingency	1,230.00	-	-	1,230.00
TOTAL	130,982.00	950.0	10.0	131,942.00

TABLE 13

Project Components included in AID Grant

	Cost
Urea - 71,000 MT at $240 C&F TSP - 48,000 MT at $190 C&F	26,160,000
Observation Training by approximately 6 BADC officials for about 30 days to India, Sri Lanka and possibly Thailand (Travel plus per diem and educational materials)	10,000
In-country Dealer Training	50,000
Two calculators with magnetic cards and program books, plus testing equipment for Modhupur Institute and Library materials	40,000
Evaluation Surveys	10,000
Contingency	1,230,000
TOTAL	27,500,000

This AID share of the total project costs is thus approximately 21 percent:

	Amount (US $ or equivalent)	Percent
BDG Contribution 10/	87,780,000	66
AID contribution	27,500,000	21
Other donor contribution (imported fertilizer)	16,662,000	13
TOTAL	131,942,000	100

10/ Including quantity discount estimated at $150,000 equivalent.

C. Social Analysis

1. Social Cultural Feasibility

a. The Social Landscape

The present population of Bangladesh is approximately 80 million with 90 percent living in rural areas and substantially dependent on agriculture and agro-related industries for their livelihood. In addition, many upper and middle class urban dwellers retain title to agricultural land and receive income from agricultural production. Although agriculture accounts for 61 percent of Bangladesh's gross domestic product, yields per acre and per capita food production are among the lowest in Asia.

The key to the social and economic (and often political) hierarchy in rural Bangladesh is the land tenure system. Land is considered the most secure form of investment and a primary determinant of social status in rural Bangladesh. In a situation where institutions are weak, resources scarce and population expanding rapidly, land ownership is the firmest guarantee that one can provide the necessary subsistence for one's family. Further, title to land is usually necessary for a farmer to obtain institutional credit. Credit from moneylenders is extremely costly, i.e., 50 percent interest per crop or at least 100 percent per year. Instances of up to 300 percent per crop have been noted. On the other hand, institutional credit is quite cheap, between 13 and 15 percent per year, with interest rates being establishing by the Government rather than the market. This accentuates the difference between land-owners and non-land owners.

Since Moslem inheritence laws ban primogeniture, all sons are legally entitled to equal shares of their father's land while daughters receive lesser shares. This leads to a perceived need to pass on to one's sons sufficient land to ensure their survival and that of their families. Thus the pressure to hold on to the land one has or, if possible, acquire new land is enormous. Given these pressures, profits derived from agricultural production are very likely to be invested in procuring additional land. Conversely, agricultural production losses, over a period of time, are apt to result in the loss of land.

Accordingly, land-ownership is extremely important in the socio-economic setting of rural Bangladesh. Previous research into the land tenure situation has cast most Bangladeshi farmers as a small yeomanry. That is, most farmers own small holdings which they till with their own and family labor. The Mission's present Land Occupancy Study, although

not complete, has collected sufficient data to indicate this is not the case and, in fact, the owner-cultivator, as defined above, is more the exception than the rule. Present proportions are not yet defined but it seems reasonable to assume that at least a plurality, if not a majority, of farmers till the soil on either a sharecrop or lease arrangement. An equal amount of land is estimated to be cultivated by agricultural laborers supervised by owner-managers.

For purpose of this analysis, these three groups will be used:

1. Sharecroppers - Those who own no land, except possibly their homestead, and till the land of others in exchange for a share of the crop.

2. Owner-cultivators - Those who till their own land using their own or family labor.

3. Owner-managers - Those who oversee the cultivation of their own land by agricultural laborers.

The Land Occupancy Study defines sixteen different tenurial arrangements and the above groups are not necessarily synonymous with any one of the sixteen. Each of the three above cover, in whole or in part, three or four in turn of the sixteen in the Land Occupancy Study. These three groups however do offer the most useful comparisons and, at the same time, are sufficient for purposes of the present analysis.

Moslem inheritance laws lead to intense fragmentation by sub-dividing land holdings, almost infinitesimally, among five or six children per generation. Further, a daughter's inheritance is passed to her husband on marriage. The result is that most cultivators till less than two acres, fragmented into as many as 10 different plots and scattered over two or more villages.

b. Motivation

The primary motivating factor for all three groups to adopt fertilizer use will be economic, i.e. income maximization. This, in turn, is highly dependent on retail fertilizer prices and output prices at the farmgate. A more complete discussion is contained in the financial analysis.

The sharecropper, as usual, is trapped in a very tight squeeze. On the one hand, he has to bear all of the costs of the inputs (fertilizer, seed, animal power, water, etc.) while paying exorbitant interest rates to non-institutional sources of credit to obtain these inputs. These rates tend

to be a deterrent to the adoption of HYVs and agricultural inputs. On the other hand, because half (or more) of his production goes to the land owner, traditional varieties may not produce enough to feed his family and, therefore, he may need credit from non-institutional sources for consumption purposes. Further, if the land-owner does not believe he is receiving a sufficient return from his land, he may displace the sharecropper either by giving the land to someone else to sharecrop or by taking over as an owner-manager.

If the farmgate prices are high enough and if the sharecropper is able to meet his family's consumption requirements and have a marketable surplus more than sufficient to cover his production costs, then he is financially justified in making the investment in the package of inputs traditionally associated with HYVs. But if his return is any lower than that, he would be just as well off if he spent his money (or borrowed) for consumption rather than inputs.

Owner-cultivators, of the three groups, may be the most likely to adopt or increase the use of HYV technology and or apply agricultural inputs. This group, by virtue of land ownership, is entitled to institutional credit. This combined with the use of family labor makes the financial return for HYV investment very attractive. The owner-cultivator may seek to produce a marketable surplus for cash income, which in turn may be saved, invested in new land or used to pay off old debts. If the owner-cultivator can feed his family and produce a marketable surplus with traditional varieties, which command a higher farmgate price than HYVs, he may choose not to grow HYVs. This is especially true if he also perceives HYVs to be a technical "high risk", since he has to mortgage his land to obtain credit. The calculation of risk will be dependent, for example, upon whether he can grow one crop or two. If two crops are reasonably possible, he may adopt HYVs for one crop while continuing traditional varieties in the other. If only one crop is possible, the owner-cultivator faces a "double or nothing" situation.

The owner-manager probably faces much the same situation as the owner-cultivator. The very nature of his status, however, indicates that he is in a position to be more "risk taking" and innovative than either of the other two groups. It is unlikely that a single crop failure will result in a decline in his status, although inheritance laws may force his children into the owner-cultivator category. The key element here is that increased income will tend to be used for the acquisition of more land, displacing marginal landowners. Moreover, increased returns on production

and the continued decline in agricultural wages to farm labor,[11] could attract present absentee landlords into the ranks of owner-manager, forcing sharecroppers into the category of agricultural laborers.

2. Spread Effect: The Diffusion of Innovation

The use of fertilizer was initially promoted by subsidization to the farmer by the Government. Although reduced, these subsidies remain in effect today. During the 1974-75 fertilizer shortage, the Government instituted a rationing system which allocated fertilizer by area and crop through allotments. Maximum amounts were set for individual farmer purchases in order to ensure a fair distribution. The intention of the rationing was fair distribution directed toward priority crops (e.g., HYVs) and all farmers. In practice however the larger owner-cultivators and owner-managers usually had the local political weight to obtain fertilizer allocations at the subsidized rate, while the sharecroppers and small farmers most often only had access to the blackmarket where they paid much higher prices. This rationing system was dropped by August 1975.

The Government has since sought to guard against a shortage situation, and a major objective of this project is to alleviate the supply constraints on fertilizer utilization. Another objective, through the use of various incentives, is that fertilizer dealers will promote the use of fertilizer among farmers of all types. The technical and economic constraints on increased fertilizer usage are discussed elsewhere. This discussion focuses on the socio-cultural factors.

Since the project in large measure is dependent on the private fertilizer dealers it is important to note that there is a remarkable lack of entrepreneurship in rural Bangladesh. A number of hypotheses have been advanced as reasons for this phenomenon. Among these are:

1. Entrepreneurs are attracted to the urban areas by better opportunities;

2. Economic policies are not conducive to entrepreneurship;

3. Lack of credit, adequate transportation and communication systems and rural electricity hamper investment in rural industries and services;

4. The culture in Bangladesh gives relatively high status to the professions and civil service and relatively low status to businessmen or traders;

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[11] The Quarterly Journal of The Bangladesh Institute of Development Studies, Vol.IV, No.4, October, 1976, "Institutional Change and Agricultural Wages in Bangladesh" by Edward J. Clay.

5. Much of the mercantile class (historically mostly Hindu) have left Bangladesh leaving a void which has only been partially filled; and

6. Where resources and wealth are perceived to be fixed and one man's gain is another's loss, profit-seeking entrepreneurs are viewed with a great deal of suspicion.

All of these factors may play a role but the resultant attitude is that entrepreneurs must be closely regulated. It is instructive to note that recent rises in the price of rice in Dacca - while seasonal and predictable - were blamed on the "evil intent" of private grain dealers. While BADC has stated its desire to liberalize restrictions on private dealers and is doing so, it is clear that BADC is not ready to lift restrictions completely at any point in the near term.

Under the presently contemplated arrangements, dealers will be working within locales where they are relatively well-known. Prevailing attitudes, however, may serve to limit the future scope and geographic coverage of individual dealers, which is presently limited by regulation to a union and within that union to a distance category.

3. Social Consequences and Benefit Incidence

a. Access to Resources and Opportunities

It has been previously noted that present agricultural input-output price relationships most likely work to the advantage of the more well-to-do farmers. In the absence of higher grain support prices, better credit, lower fertilizer prices or of any other Government action, or a major crop failure, the continued sale of imported food at subsidized rates to the urban market means these present price relationships will probably hold. An aggressive, large procurement program which pays prices necessary to boost farmgate prices at harvest time to a level substantially above the "break even" point, estimated in the financial analysis to be Tk 73 per maund of boro paddy, will be needed to ensure sharecroppers are not unduly disadvantaged. At the same time, institutional credit is needed for sharecroppers in order to reduce their interest costs of obtaining HYV seeds and other agricultural inputs.

b. Employment

Agriculture in Bangladesh is already labor-intensive and large scale mechanization is not likely in the foreseeable future. On the land which is non-owner cultivated additional jobs will probably not be created.

The sharecropper and his family will probably just work harder. There is one possible exception. Clay [12]/notes there are arrangements wherein the sharecropper pays agricultural laborers in kind and then divides the net harvest with the land owner. In this case, the sharecropper passes on at least a portion of his cost to the land owner. If farmgate prices are high enough, the sharecropper may prefer to enter into this type of arrangement.

An owner-cultivator could employ more casual labor but this will depend on the level of under-employment in his family. The owner-managers will employ more labor, if they increase their use of HYVs. Given the level of rural unemployment, more jobs may be created but agricultural wages will not rise.

c. Rural Displacement, Migration and Urbanization

Sharecroppers may be the most likely group to be displaced. The probabilities are that they would not migrate to urban areas, but would either continue to work the land as wage laborers, become migrant rural workers, or seek relief in one of the various public works relief programs.

d. Changes in Power and Participation

This project will have no bearing on changes in the ability of any group to affect public policy.

12/ Ibid.

D. Economic Analysis

It is projected that 567,000 MT of fertilizer will be distributed in Bangladesh in the crop year 1978-79. The total cost of this fertilizer (on a c.i.f. plus internal distribution cost basis) is $130 million. As a general rule of thumb, about eight pounds of increased rice yield can be expected from the application of one pound of fertilizer and the mix of fertilizer used in Bangladesh is about 46 percent nutrient per weight. Therefore, the $130 million is expected to result in approximately 2.087 million MT of additional foodgrain. Some current prices of foodgrain are as follows:

1. Imported wheat delivered upcountry in Bangladesh is $170/MT ($130 CIF Chittagong plus inland transport).

2. Imported U.S. rice delivered upcountry in Bangladesh is $350/MT ($310 CIF Chittagong plus inland transportation).

3. Current local market price of paddy is Tk 95 per maund equals $250/MT equivalent for rice.

Given the above prices as a general range, a sensitivity analysis as follows indicates the economic rate of return for fertilizer use at varying prices of foodgrains:

Table 13

Price of Rice $/MT	MT of Additional Rice Produced (In millions)	Value of Additional Rice Produced (In $ millions)	Fertilizer Cost of Additional Rice Produced (In $ millions)	Economic Rate of Return (In percent)
100	2.087	209	130	61
135	2.087	282	130	117
170	2.087	355	130	173
200	2.087	417	130	220
250	2.087	520	130	300
350	2.087	730	130	461

Therefore, at the current cost of imported wheat, the project has a return 173 percent in excess of costs. The economic returns, in terms of local rice purchase and of rice imports, are still higher with the use of fertilizer.

Domestic foodgrain prices do fluctuate and thereby affect the economic return from the use of fertilizer. Rice market prices in Bangladesh in the last several years have dropped as low as $135 per MT. Even at this level the use of fertilizer has a return of 117 percent above costs.

Thus, from the perspective of both international and domestic costs, the economic return to the country from the use of fertilizer is considered more than adequate.

Bangladesh Balance of Payments Position

Bangladesh's balance of payments position, weak to begin with, deteriorated steadily between 1972 and 1975. Foreign exchange reserves, which had grown to $227 million in December, 1972, due principally to the fact that the import trade had been disrupted even more than exports, fell to $86 million in February of 1973. Reserves were reported exhausted by mid-1974 and, accordingly, the July-December, 1974 import licensing program was drastically curtailed. Non-donor-financed imports, other than food, were cut from $431 million in the first half of 1974 to $293 million in the second. On August 1, 1975, reserves had recovered to the level of $232 million, sufficient enough to allow the Government to lift some of its restrictive import processes. Reserves have remained at this level and higher through 1976 and into 1977.

Exports have never attained more than 80 percent of their pre-war level. While the Government had forecast a 32 percent rise in FY 1975, over FY 74, the IMF, after careful examination of the export picture, concluded that the actual increase was insignificant. FY 1974 non-food imports were less than 70 percent of pre-war imports. To import even this reduced market basket, plus the increased volume of food imports needed, would mean at least a 30 percent import increase for FY 1975. The FY 1975 and FY 1976 balance of payments reflect essentially the same basket of imports, but at increased prices to the aid donors. International CIF prices have stabilized in FY 76-77 but the import burden on the Government remains severe.

TABLE 14

BANGLADESH BALANCE OF PAYMENTS

($ Millions)

	1975/76 Est.	1976/77 Projection
Imports	- 1,420	- 1,350
Exports	330	405
Other	- 20	- 28
Current Account Balance	- 1,110	- 973
Other Receipts and Payments	35	40
IMF	106	0
Debt Service	- 34	- 20
Change in Reserves	98	0
Total External Capital Requirements	905	953
Disbursements from Aid Pipeline	501	473
Disbursements from New Commitments	404	480

Source: IBRD March, 1976

Unless there is a very marked increase in aid, Bangladesh will not be able to support its projected current account deficit. Only OPEC country aid could possibly be forthcoming in amounts large enough.

7. Debt Service Requirements

Bangladesh's debt service burden was only $18 million in FY 1974, rising to only $28 million in FY 1975, an indication of success thus far in getting aid on either grant or very soft loan terms with long grace periods, appropriate to its situation. Although we do not have an accurate estimate of the amount of former Pakistan debts that Bangladesh has assumed under the debt division, the service burden will be very light, with creditors expected to reschedule at 84 percent grant element or better. On March 3, 1976, Bangladesh and the United States signed a rescheduling agreement, by which the Government assumed liability

for almost $88 million; the terms for repayment of Visible Project Loans called for a fifteen year grace period, 1.6 percent interest rate, and forty-year repayment schedule.

We expect that all donors will continue to provide assistance either on grant or concessional loan terms, as required by Bangladesh's status as one of the least developed countries in the world. Overall, we believe that the economic condition and prospects of Bangladesh support the furnishing on a grant basis of the assistance to be provided under this project. This is consistent with the inclusion of Bangladesh in the AID listing of 40 countries eligible for development grant assistance under the provisions of Section 211(a) of the Foreign Assistance Act, and with the UNCTAD definition of Bangladesh as a "relatively least developed" country for the purposes of Section 110(a) of the Foreign Assistance Act. Accordingly, it is recommended that the $15.25 million AID portion of this project be provided to Bangladesh on a grant basis.

E. Role of Women

Agriculture is by far the largest single sector in the economy of Bangladesh. Economic growth requires optimum utilization of agricultural resources, both human and physical.

The purpose of this project is to assist Bangladesh in increasing agricultural production by making available adequate agricultural inputs. Although women in Bangladesh seldom work side by side with men and children in the fields, they do perform a significant role in agricultural production. There may be a great diversity, however, in the farm activities by women, depending on a family's economic status, the size of holdings, tenancy, and the nature of the particular community.

The women's busiest time is at the harvest and post-harvest season, as it is for all family members. Women have primary responsibility for winnowing and sieving newly threshed paddy, and parboiling, drying, husking and home milling of all rice used in home consumption. In addition, women perform some of the above processes for the paddy sold in the market. Women also assist with the threshing in many families. If there are not enough female family members to perform these processing functions, women day laborers are hired to assist the family members and are paid in cash or kind (often a portion of the processed paddy).

Also, the planting and maintenance of kitchen gardens located within or close to the bari (household compound) are the primary responsibility of female family members. For very poor and landless families, the surplus produce from these gardens which is not needed for family consumption is often sold for much needed cash. To the extent that the inputs of this project are available to women for use in such horticulture they will increase the yield of kitchen gardens and, as a result, also improve the nutritional and economic status of poor families.

In the realization of higher farm incomes, women and men will, of course, benefit equally from this project. Moreover, rural women could utilize part of the incremental household earnings for investments in further development of cottage industries, which provide sustenance to many a rural household, and thereby further improve their family's well-being. The opportunity for learning or improving the skills for such activity may be provided through a companion AID FY 1977 project for the National Women's Development Academy which is specifically directed to development of skills for rural women.

Although this project probably will not result in any major social change, attention will be given to the role of women in assessing the likely effectiveness of the project. Women are not only capable of harnessing their own talents, but guiding these of their children and other family members.

IV. Implementation Planning

A. Administrative Arrangements

1. Bangladesh Government Implementation Responsibilities

The Bangladesh Agricultural Development Corporation (BADC), a public corporation, imports and procures locally all fertilizers distributed in Bangladesh. (See digest of BADC charter at Annex B.9.) BADC was established in 1961 in East Pakistan to handle a range of agricultural inputs and activities, not only fertilizer. These include for example seed, agricultural machinery and equipment, lowlift pumps, shallow tubewells, seed multiplication farms and working with cooperatives. The corporation has semi-autonomous status within the Ministry of Agriculture and the Chairman of the Corporation reports directly to the Secretary, Ministry of Agriculture. (See organization chart at Annex B.11.) BADC is responsible for the movement of fertilizer to the thana level where it is purchased from the BADC warehouse by private licensed retail dealers. In the case of 87 of the total of 420 thanas, the Thana Central Cooperative Association (TCCA), a unit within the Integrated Rural Development Program (IRDP), acts in place of BADC as a wholesale agent and resells the fertilizer to its members, to village cooperatives or to one of its dealers.

There is no doubt about the basic capability of BADC to manage the procurement, marketing and distribution of fertilizer, including imports. From 1962-63 when it actually assumed responsibility for this sector, the corporation has managed or presided over a growth of fertilizer sales to the present averaging over 600 percent for the period. Annual quantity in the same period has grown from 73,000 MT to 458,000 MT. The issue is not whether BADC is capable of handling the relatively small component which the fertilizer to be financed under this project represents of BADC's total requirements for this coming year. The answer to that question is unquestionably yes. The issue in the broader sense is whether the system is functioning so that increase in the use of fertilizer can be sustained at a rate which will bring the country to self sufficiency in foodgrains by a reasonable target date, the mid to late 1980s for example. Part of the same question is whether the system can function to improve the standards of living and income of farmers over that

same time. These are questions which in their full implications go beyond the analysis of this paper but which are addressed in the Ashuganj Study (See Annex B. 13) and will be in the FY 1978 Fertilizer Distribution Improvement Project.

Certain key points however are reviewed in brief below.

There is continuing discussion as to the extent to which BADC should be involved in the fertilizer distribution system, i.e., should it remain the only source for marketing and distribution, should other Government corporations have a share, e.g., the BCIC which is directly engaged with fertilizer production, or whether and if so how much of the responsibility should be handed over to the private sector. Before turning to that discussion, the point should be emphasized that at the very bottom level of the system, at the point of contact with farmers, the system is in private hands. The dealer himself is a private person, not a Government official. He is typically a farmer himself or a small shopkeeper, or both. Two of the principal issues addressed by the AID-BADC pilot program and to be addressed by the Ashuganj Study concern the requirement of providing an assured supply to dealers as well as adequate incentive to them to increase their sales. The question of assured supply is directly addressed by the timing and amount of imports to be financed by this project. The effectiveness of the dealers is the final test of the whole system and as discussed under Part III. A above this FY 1977 project will continue to test the changes which are directed to meeting that requirement.

On the broader question of the role of BADC, the Interim Report has addressed a series of recommendations which in brief terms would result in a phasing out of BADC and a phasing in of the private sector. This would start through a turning over of BADC's wholesale responsibility at the thana level to private dealers. For a time and in a number of thanas BADC and the private wholesalers would compete as the conditions for development of the market required. In other thanas too inaccessible to provide adequate incentive for private entry, BADC would continue to provide fertilizer. One of the basic recommendations of the Interim Report is that BADC have a continuing responsibility to provide an adequate supply of

fertilizer throughout the country, and that this cannot be achieved without some continued BADC role even as the private sector is phased in. The Report therefore proposes that the thana warehouses for example remain under control of BADC so that BADC can return as wholesaler if necessary where a private wholesaler is unable or unwilling to fulfill his undertaking. Also, as noted above, for those areas of the country which are difficult of access or where demand would not be sufficient for private entry, BADC would also remain in the field as the principal wholesaler at thana level.

The Report goes on to point out that this movement could be phased, so that as the private thana wholesaler system became effective countrywide, the BADC role could withdraw up the distribution chain. Eventually over a period of years BADC would get almost entirely out of the business of fertilizer distribution, except for a continuing responsibility for promotion, information and education, and marketing improvements. With respect to the actual physical movement of fertilizer, BADC would then have become only a minor partner. Obviously all of this is somewhere down the road. The issue is now addressed in the Interim Report and these points are under discussion with BADC. There may well be a requirement for additional analysis and perhaps revision before these recommendations reach final form in Phase II of the study.

The basic constraints on fertilizer distribution which would affect this project include the following:

a. Transportation - The Bangladesh Transport Survey ((BTS) 1974, by the Economist Intelligence Unit under IDA financing) is being applied in the Ashuganj Study as a basis for reviewing the requirements and costs for internal transport of fertilizer. Generally, the current transportation system is not inadequate and will be able to move the volume of fertilizer, including that under this project, during the two years 1977-79

with which we are immediately concerned. Most of the fertilizer is handled by road and water with a smaller balance moving by rail. The Bangladesh Inland Water Transport Corporation (BIWTC, a government corporation) has indicated that it can handle all public sector fertilizer flows until the Ashuganj plant comes into production in 1980 or 1981. This will add an approximate 475,000 MT to the movement requirement. Per the projections at Annex B.2 however this volume would occur from demand growth at just about the same time in any case, although the production schedule of the Ashuganj plant may permit less flexibility for movement than scheduling of imports does. The problems of excessive turn around time, lack of spare parts, shortage of jetties, delaying labor practices, slow handling procedures, all of these combine to reduce efficiency, but nonetheless the transport system functions. The Government is now carrying out a phased denationalization of part of the BIWTC fleet and this should increase the efficiency with which the remainder of BIWTC's equipment operates.

Basically, the transportation of fertilizer covers several categories. First of these is the main movement from factory or port inland to the main transit godown. This is where BIWTC, the railway and the main roads carry the principal load, and on this level the movement of fertilizer is not necessarily efficient but workable. Given constraints on capacity however and growth in volume, particular attention will have to be directed to parallel phasing of foodgrain flows, movement of which is by the same basic carriers as those for fertilizer. The second category, movement from the transit or intermediate warehouses to the thana level, is a more critical link. This is addressed by the BTS which deals particularly with the very heavily congested routes and transhipment points. This link is also the subject of analysis by the Ashuganj Study and should be addressed further in Phase II. The final level of transport is to the thana level and below thana to dealer; transport is by road, including bullock cart and hand pushed wagon, and by all types of country boats.

Two tentative conclusions are suggested. First that the transport modes are sufficient for the task of moving the current and projected fertilizer volume in the short term (1980-81). One main factor however bears on this.

This is the timely availability of fertilizer at points of arrival and intermediate points of shipment. The timely availability of fertilizer at point of shipment is most important and there is probably no effective substitute for a sufficient on hand stock in advance of movement target times. Although BADC contracts all of its transport (and the Interim Report recommends no basic change in this practice), timing is a requirement which has to be dealt with principally by BADC. Inability to move fertilizer due to river, road or rail booking conditions generally derives in part from delays further up the chain in having stocks at the movement points on time. The problem is then often aggravated by flood and weather conditions. The Interim Report has recommended some related changes in the method of contracting for transport which may increase the efficiency of transport and reduce costs.

Second is that with the expected increase in fertilizer demand over the next ten years, there will have to be a much greater increase in transport facilities. As the Interim Report points out, only a small part of this increase can be taken up by improvements in the efficiency of the transport services, probably not more than 25 to 30 percent of additional capacity realizable from such improvements. The remainder will have to come from actual physical increase. At the moment however transport is not an effective constraint to the implementation of this project.

b. Credit

The level of wages at farm level and the price for crops are the most critical determinants in the level of a farmer's profitability. It is these factors which generally decide whether a farmer can invest in fertilizer, so that the question of availability of credit may then become secondary. There is no question however that given a manageable wage cost and reasonable return on crops, the absence of credit is a constraining factor on the ability certainly of the smaller farmers to participate in fertilizer use and this has often been cited in the field reports carried out under the pilot program. See discussion under Part III. B above, Financial Analysis.

On this point, AID has under preparation a companion FY 1977 $7.0 million project directed to the trial of a number

of different models for providing rural credit to small farmers. If it is successful, the follow-on expansion of that project should have an effect on the availability of credit, particularly for the purchase of fertilizer. Similarly, AID already has under implementation a project for small scale irrigation involving handpump credit sales which it is expected will help expand credit use. (AID FY 1976 $14.0 million loan for the Small Scale Irrigation Project.) The Government at the same time is undertaking a Tk 100 crore ($67 million equivalent) accelerated program to provide credit broadly to the rural sector. The program of IRDP also includes rural credit. The institutional lenders, the Sonali Bank, Janata Bank, Agrani Bank, Bangladesh Agricultural Development Bank (BKB) and others are also enlarging their rural credit programs and are involved in the proposed AID FY 1977 rural credit project. BADC will also be taking up this question with the credit institutions as present constraints restrict the availability of credit to dealers.

Rural credit needs therefore are not specifically addressed in this project. The question is addressed by other projects, both those supported by AID as well as by those of the Government itself, so that while no dramatic results are expected during the implementation of this project, over the succeeding years there should be greater availability of credit funds for purchase of fertilizer and easier accessibility for small farmers. The question is also treated at length in the Interim Report of the Ashuganj Study which has tentative recommendations with respect to the availability of credit both to dealers and to the prospective private wholesalers. These recommendations will presumably be carried forward and revised or confirmed in the Phase II report.

c. Extension/Promotion

The extension services are probably not as efficient as they should or could be, but it must also be recorded that notwithstanding this fact, fertilizer usage has expanded by over 600 percent since 1962. This is due in no small part to the extension service efforts as well as those of BADC and the private fertilizer dealers. There are about 4300 extension workers in the field at union level, plus 420 thana officers, 62 subdivision officers, 20 district officers and four regional directors. The structure and the manpower exist:

it is the effectiveness which is mixed. The extension officers at the lower levels are overtaxed with responsibility for all types of activities. They are underpaid, underhoused, and suffer from lack of per diem,allowances, transport and most critically lack of time. All of these are standard complaints. Extension is of course a critical factor in development of fertilizer demand both in making the farmer aware of the benefits of adopting fertilizer, and once he has done so then providing him with continuing advice which he needs for its proper use.

There are several long term plans looking toward development of a new and expanded extension service, principal among which is the 1976 World Bank Minimum Package Program. This basically amounts to a reworking of the idea of the model farmer using the model farmer and the village, instead of the union, as the base. To the extent that the program concentrates extension efforts, it should offer a chance for more effective transmittal of information and an opportunity for more frequent reinforcement. It is too early to tell however how effective the program will prove to be. The medium demand projections of the Interim Report assumes a moderate level of success in improving the extension services. This is the same assumption made for this project and comparable to the Mission projections.

However, it should be pointed out that with respect to extension/promotion of fertilizers, perhaps the most potentially effective agents are BADC's 18,000 active fertilizer dealers.[13/] These are the points of most immediate and frequent contact with the farmer on fertilizer use. This project, as discussed in Part III.A above, seeks to increase the motivation and incentives for these dealers to respond to that opportunity to their own profit and to the benefit of the farmers themselves.

d. Pricing

Since the establishment of BADC the following have been the retail prices charged to the farmers for fertilizer in Bangladesh:

13/ Of a total of some 32,000 registered dealers.

Table 15

Effective Period	(Taka per maund)		
	Urea	TSP	MP
July 1, 1976 to present	60	48	40
April 1, 1974 to June 30, 1976	50	40	30
July 1, 1973 to March 31, 1974	30	20	15
July 1, 1972 to June 30, 1973	20	14	10
Feb 21, 1963 to June 30, 1972	10.12	10.12	6.37
Before Feb 20, 1963	9.00	9.00	4.50

Recent Mission field visits (March 1977) indicate that the price of paddy (paddy, or unmilled rice, equals approximately 0.67 rice) is approximately Tk 95 per maund and is on the up trend. This figure is used to add the final line to the following table which is otherwise taken from the Interim Report of the Ashuganj Study.

Table 16

Relative Trends in Farm Prices of Paddy and Fertilizer

	Fertilizer price Tk/maund nutrient	Average paddy price Tk maund	Ratio of nutrient price to paddy price	Ratio of fertilizer price to paddy price
1966-67	21.15	20.41	1.04:1	2.22:1
1967-68	21.15	17.46	1.21:1	2.59:1
1968-69	21.15	20.88	1.01:1	2.16:1
1969-70	21.15	20.04	1.05:1	2.24:1
1970-71	21.15	18.55	1.14:1	2.48:1
1971-72	21.15	25.61	.83:1	1.77:1
1972-73	38.67	42.46	.91:1	1.95:1
1973-74	57.16	64.60	.88:1	1.88:1
1974-75	99.36	119.00	.83:1	1.77:1
1975-76	99.36	59.69	1.66:1	3.55:1
1st half 1976-77	119.70	50.00	2.39:1	5.11:1
March 1977	119.70	95.00	1.26:1	2.69:1

The fertilizer price per maund of nutrient above is derived using a weighted average, assuming a urea/TSP/MP ratio of 70-25-5.

According to FAO figures for 1972-73 quoted in the Interim Report, the fertilizer nutrient rice ratios for paddy were 3.60:1 in India, 6.65:1 in Egypt, 2.82:1 in USA, 2.40:1 in Italy, 1.00:1 in Japan and .94:1 in Pakistan (using the same urea/TSP/MP ratio

of 70-25-5). This comparison would put Bangladesh currently and historically within the general range internationally. The main difference is the fact that fertilizer use is less developed in Bangladesh than in all of the other countries cited, which would argue for keeping the ratio lower than in other countries, at least until the use of fertilizer reaches a more appropriate level.

BADC maintains that the nutrient to paddy price ratio should not exceed 1.5:1 if there is to be sufficient encouragement to farmers to use fertilizer. This may be good as a general rule of thumb but the price elasticity of fertilizer sales appears to be clouded by numerous other issues.

On this point it is instructive to examine the value/cost ratios contained in Annex B.5. Where the price of paddy is Tk 60-74 per maund, most value/cost ratios fall between 5:1 and 10:1 and the corresponding range of nutrient to paddy ratios is from 1.61:1 to 2.0:1. Therefore a 1.5:1 nutrient to paddy price ratio would maintain value/cost ratios slightly above these. This, it may be argued, is higher than necessary, because it is a generally considered that a value/cost ratio of 3:1 may be sufficient to sustain input purchase in developing countries.[14/]

This may be true in Bangladesh for a portion of farmers including perhaps the most well to do farmers and most progressive farmers. It is clearly not sufficient for all farmers and most significantly perhaps for the less well off and smaller farmers, particularly the Borgadars or sharecroppers. Mission field surveys reflect numerous instances where members of this latter group of farmers were unable to purchase fertilizer for lack of cash, basically a result of lack of or lower return on earlier fertilizer use. The Interim Report suggests and the Mission agrees that value/cost ratios of 5-10 may be necessary for the time being in Bangladesh if all segments of the farmer population are to be reached. The above analysis must necessarily be qualified by the fact that the ratios contained in Annex 5 are for higher application rates than generally practiced. The conclusions are nonetheless valid for Bangladesh within the range indicated. See also discussion under Part III.B above.

Based upon the above analysis, it is tentatively concluded that a general increase in fertilizer prices (meaning decrease in subsidy)

14/ See Annex B.5.

is not called for at this time and is not likely to be desirable for the next several years unless there is a sustained increase in the price of paddy. This role of consistent price expectations may be among the most critical of factors influencing fertilizer use, even accounting for other main factors such as availability of irrigation. It is not a sole determinant however as was illustrated by the experience of 1975-76 when a value/cost ratio of 2.39:1 prevailed, yet fertilizer use continued to increase although at a lower rate than predicted by all projections. Given the present fact that the fertilizer price is nationally applied and that this procedure is unlikely to change in the immediate future, consistent crop price expectations assume however even a greater role.

Assuming then on the basis of the above that the price levels are generally consistent with the recommended value/cost ratios, the question arises of the specific balance of prices:

Urea	60 taka/maund
TSP	48 taka/maund
MP	40 taka/maund

Given the analysis in Part III.A above, the bias of these prices is probably close to being in balance with both value/cost returns and BADC expectations for an improved use mix. The immediate question therefore is whether the bias is sufficient to bring the use of TSP and MP in the direction of recommended levels, and this question - whether while keeping the general price level steady, the price of urea might be increased and the prices of TSP and MP decreased - will be addressed in detail in context of the FY 1978 project.

e. Storage

In mid 1976 BADC had approximately 1100 warehouses for the storage of bagged fertilizer with total capacity as follows:

	Capacity
Owned Warehouses	137,000 MT
Rented Warehouses	218,000 MT
Total:	355,000 MT

Since that time stock levels have declined (261,000 MT reported inventory as of April 1, 1977) and BADC has released a portion of its rented capacity.

Arrivals of Saudi Arabian urea are now expected at 13,000 MT per month from April 1977 until a total of 100,000 MT has been delivered. The arrival schedule for next year's 100,000 MT has not yet been determined. 10,000 MT of the CIDA 35,000 MT of MP arrived in March 1977. The second 10,000 MT is expected in June 1977. The remaining 15,000 MT will arrive next year but has not been scheduled yet. The total of these arrivals will be 120,000 MT by December 1977. It is interesting to note that the FY 1976 Agricultural Inputs Project contemplated a total of 125,000 MT of fertilizer arriving between March and December 1977. This total of deliveries would have been only 5,000 MT more than is now expected to arrive during the same timeframe.

With respect to the storage requirement for the future, current plans for construction include (1)69,900 MT under BADC's own "hard core" program now underway and scheduled for completion by mid 1978 and (2) the AID TQ Fertilizer Storage Construction Project (AID Loan 388-T-011) for approximately 50,000 MT, the current work plan for which now contemplates completion of all construction by December 1978.

Assuming that all of these warehouses are completed on time and that BADC could rent back the rented warehouses it has released, BADC would be able to command approximately 474,900 MT of storage capacity by 1978-79, of which 256,900 MT capacity would be owned.

BADC supply requirements are based on a three month supply in the districts with three month supply in transit at the same time. Both requirements are critical given the logistics difficulties which confront the country seasonally and the competing demand (e.g., foodgrains) on scarce transport resources. Supply at district is also a direct factor in the ability of the system to respond rapidly to requirements at the thanas.

Given projected offtakes(Annex B.1) of 566,700 MT for 1978-79, the six month buffer stock should average approximately 280,000 MT during the year. This is within the present handling capacity of BADC storage even if there were no additional construction underway.

Storage needs are also the subject of analysis under the Ashuganj Study and on a very tentative basis the Interim Report has recommended the following: by 1981 construction of 22 warehouses at intermediate level for an increase of 79,000 MT, and 243,000 MT at the thana level with 274 new warehouses. The Interim Report almost doubles these by 1985-86. These figures assume retention of virtually all rented space. During their visit to Bangladesh in March 1977, the consultants confirmed that major revisions were required in their figures on two principal points: (1) the figures should be revised upward to include replacement of nearly all rented warehouses which are almost universally of insufficient quality to protect fertilizers adequately or so small and scattered as to be unable to operate efficiently, and (2) the figures should be revised downward to reflect higher turnover ratios. These two revisions will of course counteract each other and the consultants speculated that the net change from their present recommendations may prove to be small.

Even if the Interim Report figures are halved, it will still mean a substantial additional requirement. This will be specifically addressed as one of the components of the FY 1978 project. It would be clear that at this point, however, the imports to be financed under this project and the current projected pipeline for the 1978-79 crop year will be sufficiently met by existing and to be constructed capacity within that date.

f. Procurement

Forecasting of fertilizer requirements is done both by the Ministry of Agriculture and BADC. Taking the two institutions together, the system is designed to respond to Ministry data assembled through the extension services from union, thana and sub-divisional level. The Ministry of Agriculture after establishing production crop projections, and the resulting fertilizer quantity based on recommended applications to ensure that such estimates can be achieved, then reviews these figures with the Ministry of Planning and BADC before the requirements are made final. BADC compares

these requirements with its own record of previous offtakes, future projections and availabilities. The Ministry of Planning looks principally to planned targets and availability of funds. In practice the final requirements are largely affected by the availabilities of foreign exchange for imports, which almost exclusively means availabilities of donor assistance. Production estimates or commitments from the domestic fertilizer factories are another main factor.

Once the final requirements are established, BADC then proceeds in coordination with the Ministry of Agriculture to make actual district allocations. This is done with specific attention to the record of previous years' sales. This is a reasonable basis for distribution from a commercial point of view and although it could conflict with the requirements developed by the Ministry of Agriculture, generally coordination between the two is good.

On the question of general availabilities, both the Interim Report and BADC stress the importance of rational advance scheduling of donor commitments for funding of imports. This is a point which will be specifically addressed in the FY 1978 project. As other major marketing and distribution decisions are made, the critical link in an improved system may be advance assurance of availability of funds from donors.

The amount of fertilizer to be ordered at any one time under this project will not exceed the import requirements at such time as computed separately for each fertilizer to be imported. This maximum amount will in each case be computed as follows for the type fertilizer in question:

a. Current Stock (source BADC);

b. Minus Projected 6 Month Offtakes (source Annex B.4 of this PP);

c. Plus Projected Local Production (source BCIC);

d. Minus Six Months' Buffer Stock (source Annex B.4 of this PP);

e. Minus expected other imports (source BADC and other donors);

f. Equals amount required to be ordered under this Grant.

Larger amounts can of course be ordered if appropriately spaced, and if the requirement is identified. Similarly, deliveries may be accelerated on the basis of the above criteria as well as deferred.

2. AID Implementation Responsibilities

The project includes elements which were part of the preceding AID Agricultural Inputs Loans to Bangladesh [15] e.g., the procurement and financing of fertilizer imports and the continuation of initiatives and of activities already undertaken by the AID Mission in Bangladesh. These include discussions and reviews with the Government as well as continuing field monitoring to confirm utilization of AID-financed commodities and to develop data needed for project decisions. As discussed above, the AID Mission has already been involved in monitoring the pilot fertilizer distribution program which preceded this project.

With respect to staff requirements, the Mission Agricultural Division, which has been increased from one to three direct-hire Americans, and is about to add a fourth, will carry joint responsibility with the Capital Development Division for monitoring. Social impact evaluation, as discussed under Part IV. C below, will be carried out through the Mission Program Office. The present staff, including already approved additional local personnel, should be able to meet the monitoring requirement for this project.

AID disbursements for fertilizer imports, including cost of procurement, inspection, insurance and ocean freight, will be through AID letters of commitment directly issued by AID/Washington. This is the same procedure that has operated effectively for procurement of fertilizer under the AID Relief and Rehabilitation Grant and the two Agricultural Inputs Loans. Letters of commitment are issued directly by AID/Washington to the suppliers and shippers, with copies to the Bangladesh Government. The mechanism is routine for the Government and AID, as well as for the suppliers, and should entail no difficulties in administration or timing for any of the parties.

15/ AID Loans 388-T-001 for $25.0 million and 388-T-002 for $30.0 million FY 1974 and 1975 respectively.

B. Implementation Plan

1. The basic implementation outline is as follows:

Date	Project Action
August 1977	Grant authorized.
August 1977	Project Agreement signed
October 1977	Initial conditions precedent satisfied.
October 1977 - September 1978	Procurement process initiated for all orders.
January 1978	BDG completes covenant a implementing actions.
January 1978	Training and other non-fertilizer activities under way.
January 1979	Joint AID-Government evaluation following completion of awards for procurement and shipping.
February 1978-May 1979	Arrival/transit/storage of fertilizer.
March 1979	Training and other non-fertilizer activities completed.
June 1979	Final joint AID-Government evaluation.
August 1979	Ex post facto evaluation.(If, as expected, there is an FY 1978 Fertilizer Distribution Improvement Project, the ex post facto evaluation of this project will be incorporated into the evaluation schedule of the succeeding project.)

2. Project Responsibilities:

BADC is the principal implementing agency for this project. This implementing responsibility includes the actions necessary to account separately for the quantity discounts and other activities of this project as well as continuing the role of primary provider of all basic agricultural inputs, especially fertilizer, in support of Bangladesh agricultural production. With respect to the use of the AID funds, BADC will carry out the procurement of fertilizer as it was conducted under Agricultural Inputs Project II (Loan No. 388-T-002). Under the system agreed at that time with AID/ Washington, IFBs are issued simultaneously in Dacca and Washington, bid opening is in Dacca with copies of the bids sent by the bidders to Washington to arrive within 72 hours of bid opening. The procedure includes primary evaluation of the bids in Dacca with final evaluation in Washington where AID/Washington conducts a joint review with BADC representatives who travel from Dacca. Final AID approval is required for all awards. The system works, does not entail any significant delay, and is in accord with Bangladesh desires with respect to the appropriate location for bid issuance and opening. Shipping awards are also placed by competitive bidding, but this is carried out directly by AID/Washington in cooperation with the Bangladesh Embassy and with BADC officials who travel to Washington for this purpose. Shipping and marine insurance will be in accordance with AID regulations.

BADC will also be the primary Government agency responsible for conduct with AID of the project joint evaluations. The Ministry of Agriculture and other Government representatives may however also be included in the evaluations as BADC and AID may decide. Implementation of the findings of these evaluations will principally be BADC's responsibility except as they may involve other Government agencies.

The AID Mission to Bangladesh has the second principal role in the project implementation schedule. The Project Agreement will be drafted with the assistance of the Regional Legal Advisor, negotiated by the Mission and signed in Bangladesh. Equally, discussions with BADC and the Government throughout the term of the the project will be primarily the responsibility of the Mission. Review of conditions precedent will be done by the AID Mission with the assistance of the Regional Legal Advisor.

The Mission will advise AID/Washington when conditions have been satisfied, will assist in review of draft IFBs, attend opening of bids and be responsible for monitoring arrival and transit of AID-financed fertilizer once it begins to arrive in country. As a follow-on to this project, the Mission will prepare the project paper for the FY 1978 project and conduct the discussions and negotiations required in connection therewith. The project will particularly take into consideration the outcome of the discussions with respect to the final Ashuganj Study report as well as any changes in the distribution system deriving from the conduct of this project. Present AID Mission staffing is adequate to meet these responsibilities.

AID/Washington will process the project paper and authorize the Grant. IFBs will be subject to final AID/Washington approval, and procurement will be monitored and approved by AID/Washington as discussed above. All procurement, whether of the fertilizer itself or for shipping, will be by competitive bids and subject to AID regulations. Source and origin requirements will correspond to those currently in effect at the time of such procurement as determined by AID/Washington.

C. Evaluation Arrangements

1. Government of Bangladesh Collaboration

Joint AID-Government evaluations will be conducted as part of this project and the evaluation proceedures will be included in the Project Agreement. Field teams comprised of BADC and Mission personnel separately and jointly collected the data under the pilot and jointly-evaluated it (see Annex B.10). These same evaluation arrangements will continue under this project, with the addition that the collaboration of the Statistics Bureau of the Ministry of Planning will be sought in evaluation of fertilizer use by sharecroppers.

2. Project Baseline Data

Baseline data are established for (a) total fertilizer use, (b) fertilizer use by sharecroppers, (c) fertilizer demand, (d) fertilizer supply and (e) dealer incentives and performance.

(a) Total Fertilizer Use

While the 1975-76 crop year is the latest year at this writing for which complete statistics on sales exist, the data for the 1976-77 year will be available as this project is authorized, and the figures for the 1977-78 crop year will be complete before the target 1978-79 crop year

begins. The actuals for the 1976-77 and 1977-78 years will be compared as they occur to the projections at Annexes B.1, B.2 and B.3 and the baseline then established for the measurement of project purpose.

(b) Fertilizer Use by Sharecroppers

At present the Mission does not have baseline data on the number of sharecroppers using fertilizer. Shortly, however, the Land Occupancy Study will provide estimates on the number of sharecroppers who have obtained, from any source, credit with which to purchase HYV inputs. In the course of the 1977-78 crop year, using the household listings developed by the Land Occupancy Study, repeat field surveys will be conducted to determine what proportion of fertilizer is used by sharecroppers. This will provide the baseline for the succeeding 1978-79 target year.

(c) Fertilizer Demand

During the past year or more, supply has been adequate in almost all areas to meet effective demand. But the Mission recognizes that demand constraints can be more important than supply constraints in that effective demand may not equal actual demand. For instance, it was noted in the pilot that many farmers do not purchase fertilizer for lack of cash (credit) and that sometimes, though the fertilizer is available at the thana warehouse, it does not reach the distant unions. Therefore, as a part of the surveys mentioned in (b) above, it will be attempted to determine from the sharecroppers what difficulties they are having translating their actual demand into effective demand. In this context two key assumptions will especially be monitored and evaluated: the first, is the ratio of fertilizer cost to farmgate harvest prices, and the second, the availability of institutional credit to sharecroppers. Although we have some confidence that farmgate harvest prices must be greater than Tk 73 per maund for boro paddy and Tk 82 per maund for wheat to be a sufficient inducement for sharecroppers to buy fertilizer at present prices, we do not know how much greater it must be. Therefore, we will use Tk 73 as a minimum base below which the price of paddy may not drop. Baseline data on institutional borrowing by sharecroppers from the Land Occupancy Study will be used for the assumption that institutional credit is available to sharecroppers, and will be used in the repeat field surveys noted above. Therefore, these surveys will establish the actual fertilizer use by these sharecroppers, the proportion of credit obtained which is used for fertilizer purchase, and the extent of other demand constraints.

(d) Dealer Incentives and Performance

Dealer incentives as they exist now shall be taken as the baseline, which shall be considered a zero starting point. Changes to the system where they occur (for instance the two tier system replacing a four tier system or the use of quantity discounts) will be measured as against this zero baseline. Dealer performance will be evaluated on the sales records available at the thana warehouses. The quantity discount will be measured through performance comparisons between pilot and non-pilot dealers.

(e) Fertilizer Supply

On the supply side, the domestic production estimates at Annex B.6 and the import requirements at Annex B.4 will provide the baseline. Per above, these will be confirmed and revised as necessary for the 1976-77 and 1977-78 years before the target 1978-79 year.

3. Data Collection

Data on fertilizer offtakes by type and locality and data on fertilizer stocks (supply) are available at BADC usually current to the last month. Dealer performance and dealer incentives will be monitored on an on-going basis by BADC and Mission personnel. This will be done both by collection of dealer records available at the thana warehouse and by field interviews with the dealers.

Data collection for fertilizer use by sharecroppers and for fertilizer demand (and constraints thereto) will be by field surveys in a representative thirty percent of all rural thanas including all districts and with some repeat coverage both during the 1977-78 and the 1978-79 crop years. This should provide more than adequate coverage. The reporting format will be standardized for all field teams.

4. Schedule of Evaluations

As discussed in Part IV.B above, the Implementation Plan calls for two principal joint AID-Government evaluations of the project. The first of these will take place in January 1979 following completion of procurement and following the awards for shipping and beginning of actual shipment of the fertilizer to Bangladesh. This evaluation will center principally on the mechanics and procedures involved in the procurement and shipping arrangements, whether these were carried out satisfactorily, and where they can be improved upon either in the procedures of BADC or those of AID. The second evaluation will take place in June 1979 following arrival of all fertilizer in Bangladesh. Each of these evaluations will also include an assessment of

data collected on total fertilizer use, on fertilizer use by sharecroppers, on fertilizer demand, on fertilizer supply, and on dealer incentives and performance. The ex post facto evaluation, measuring the achievement of the goal and purpose targets, will be carried out at the end of the 1978-79 crop year in the context of the evaluation schedule for the succeeding FY 1978 project.

5. Evaluation Manpower Requirements

The evaluation requirements for the project can be met within current AID Mission staffing levels, with the single exception that the collection of data on fertilizer use by sharecroppers and constraints thereon will require external assistance, probably from the Statistical Bureau of the Ministry of Planning and other local professional resources. The responsibility for obtaining this assistance and for compiling this data will lie with the Mission Program Office.

The principal responsibility for evaluation in the areas of total fertilizer use, fertilizer supply and dealers' incentives and performance will be accepted jointly by the Agricultural Division and the Capital Development Division in addition to contributions from the Program Office. The Mission has the basic in-house experience and capability for such evaluations without the necessity for further training. As noted above, the Mission staff will be working with BADC officials on an informal basis throughout the entire project and evaluation cycle in order to ensure that project requirements are met. On the BADC side, the current BADC staff level of two research officers, one evaluation officer and one statistician is sufficient to meet BADC evaluation responsibilities under the project. Use of available AID Handbooks for discussion and training purposes will be employed by the AID Mission in working with BADC staff.

D. Conditions Precedent, Covenants and Negotiating Status

1. Conditions Precedent to Initial Disbursement

a. Legal opinion as to the binding character of the Project Agreement.

b. Designation of authorized representatives of the Government.

c. Assurance that budgetary allocations will be established for FY 1977-78 and FY 1978-79 in local currency for BADC sufficient to carry out the project for each year, including an undertaking to increase such allocations if required to meet the requirements of the project.

2. Conditions Precedent to Additional Disbursement

Evidence of arrival and out-turn reports and claims concerning any fertilizer under a preceding procurement financed by this project, when such fertilizer has already arrived in Bangladesh.

3. Covenants

a. Except as AID may otherwise agree in writing, the Government will within six months of execution of the Project Agreement cause BADC to take implementing actions with respect to the following:

(1) increasing the incentives to fertilizer dealers, including implementation on a test basis of quantity discounts for increased fertilizer purchase; (2) permitting farmers to buy up to a stated amount of fertilizer from the BADC thana warehouses; (3) permitting farmers to buy fertilizer from any dealer; (4) optimizing the number of dealers at union level including simplifying the dealer application process; (5) regularizing sales at local markets "hats" to permit dealers to sell at such hats within the union and distance category in which the dealer is resident; and (6) permitting dealers to purchase fertilizer from the most convenient BADC thana warehouse even if not located in the same thana where the dealer resides.

b. The Government will consult with AID from time to time at the request of either with respect to the obligations accepted by the Government under this project and any question related thereto.

c. The Government shall make available to BADC promptly as needed, the land, funds, facilities, services, personnel and other resources, including funds for construction or acquisition of additional warehouse or storage space, which are required, in addition to the proceeds of the Grant, for carrying out the project; such funds are to include budgetary allocations for the 1977-78 and 1978-79 fiscal years in local currency sufficient for carrying out the project.

d. The Government will cause BADC to carry out the project with diligence and efficiency, and in accordance with sound administrative, financial and agricultural practices, and shall not take nor permit any action to be taken which would interfere with the effective implementation of the project.

e. The Government will cause BADC to operate the project in such manner as to ensure the continuing and successful achievement of the project purpose.

f. The Government shall implement those obligations of the Government under the Loan Agreement between the Government and AID for the Ashuganj Fertilizer Project which affect or have relation to the implementation of this project, including, but not limited to: (1) those requirements for the efficient operation of the fertilizer plants producing fertilizer in Bangladesh; and (2) the timely furnishing of proposals to AID, following completion of the fertilizer marketing and distribution study as provided under the Ashuganj Fertilizer Project, for a program to improve fertilizer marketing and distribution.

g. The Government will consult with AID from time to time at the request of either with respect to basic inland transport capability and will take action to increase the efficiency of such transport as it affects the implementation of the project.

4. Terminal Dates for Conditions Precedent and Disbursement

a. Conditions precedent to initial disbursement shall be met within one month from the date of signing of the Project Agreement.

b. The terminal date for requests for new disbursements and issuance of letters of commitment under the Grant, (TCD), will be 24 months from the date of signing of the Project Agreement.

c. The terminal date for disbursements under the grant will be 36 months from the date of signing of the Project Agreement.

5. Status of Negotiations

Negotiations and discussions have been going on with the Government, particularly with BADC, since July 1975 when the issue of acting immediately to improve the fertilizer distribution and marketing system was first raised in context of the FY 1976 project. These discussions initially resulted in agreement on the pilot project initiated in March 1976 which has been carried out into this current year. The AID Mission separately, and the Mission and BADC jointly, have carried out reviews and field surveys of the effects of the pilot throughout the term. As findings indicated that changes were necessary the conditions of the pilot were modified. With respect to the pilot's applicability to this project, both the Mission and BADC have agreed upon the terms of this project as reasonably proceeding from the results of the pilot.

The main questions with respect to the fertilizer marketing and distribution system will be addressed by the Ashuganj Study with a separate schedule for review, agreement and implementation following the completion and presentation to the Government later in 1977. In addition, discussion continues within the Government on fertilizer related matters as illustrated by the Draft Recommendations of the National Workshop on Fertilizer Distribution and Marketing at the Small Farmer Level (see Annex B.14).

BADC has reviewed AID Mission projections developed in context of this project and while its own projections are higher (see Annex B.3 and discussion under Part III.A above), BADC accepts the AID figures as a reasonable basis for establishing the import levels. Accordingly, the Government has requested that AID financing be provided to meet this requirement, and that funding be on a grant basis.[16/] Both BADC and the AID Mission have agreed that if the requirements justify acceleration of deliveries, AID will consider abbreviation of normal AID procurement procedures in order to expedite arrivals. In the case of deferring deliveries, no such question would arise.

Agreement has been reached with BADC with respect to the terms of the project, including all substantive conditions and covenants. Signing of the Project Agreement therefore and satisfaction of initial conditions precedent should engage no delay in implementation of the project.

16/ See Government's application for assistance at Annex H.

AID/W PRP APPROVAL MESSAGE

R 152131 FEB 77
F SECSTATE WASHDC
TO AMEMBASSY DACCA 0505
BT
UNCLASSTATE 034394

AIDAC

E.O. 11652: N/A

TAGS:

SUBJECT: FERTILIZER DISTRIBUTION IMPROVEMENT

1. APAC IN MEETING HELD NOVEMBER 16 AND NOVEMBER 24, 1976 REVIEWED THE PROPOSED PROJECTS FOR AG INPUTS, FERTILIZER STORAGE II AND FERTILIZER BULK HANDLING. ALL THREE WERE APPROVED FOR INCLUSION IN THE FY 78 CP ON THE BASIS THEY WOULD BE CONSOLIDATED INTO A SINGLE PROJECT QUOTE FERTILIZER DISTRIBUTION IMPROVEMENT UNQUOTE. TOTAL FUNDING PROPOSED IN FY 78 CP IS DOLS 34 MILLION.

2. THE COMBINING OF THE THREE PROJECTS PRESENTS A MORE UNIFIED SECTOR APPROACH, SIMPLIFIES THE CONGRESSIONAL PRESENTATION AND PROVIDES NEEDED FLEXIBILITY IN FUNDING THE INDIVIDUAL COMPONENTS. IT ALSO PROVIDES MORE INCLUSIVE AND COHERENT BASIS FOR DIALOGUE WITH THE BDG ON POLICIES AND STRATEGIES FOR MANAGEMENT PURPOSES. THE THREE PROJECTS WHILE COMBINED INTO ONE PP WOULD NEVERTHE LESS BE SET UP AS SEPARATE COMPONENTS WITH INDIVIDUAL CONDITIONS PRECEDENT SO THAT DELAYS IN ONE ELEMENT UNIQUE TO THAT ELEMENT NEED NOT DELAY ENTIRE PROJECT.

3. THE AMOUNT PROGRAMMED FOR AG INPUTS III FOR FY 77 IS DOLS 9 MILLION. THE PP SHOULD ADDRESS THE FOLLOWING ISSUES TO THE EXTENT FEASIBLE:

(A) THE RELATIONSHIP OF FERTILIZER USAGE TO THE PRICE OF INPUTS WITH A BREAKDOWN OF FERTILIZER REQUIREMENTS BY CROP AND SEASON.

(B) METHOD TO BE USED BY MISSION IN DETERMINING WHAT PERCENTAGE OF FERTILIZER REQUIREMENTS IT WILL FINANCE.

(C) THE SOCIAL SOUNDNESS ASPECTS OF PROJECT AS IT IMPACTS ON BENEFICIARIES, INCLUDING AN ASSESSMENT OF THE LIKELIHOOD THAT PROJECT WILL INCREASE FERTILIZER USE BY SMALL FARMERS, MEASURES TO MAXIMIZE FERTILIZER USE WITHIN TARGET GROUP AND RELEVANT INFORMATION GATHERED BY JANUZZI STUDY.

(D) A DESCRIPTION OF THE FERTILIZER DISTRIBUTION SYSTEM AND ITS RELATIONSHIP TO EXTENSION, IRDP AND OTHER GOVERNMENT AGENCIES SERVING SMALL FARMERS.

(E) AN ASSESSMENT OF THE CAPACITY OF THE BADC AND OTHER PARTICIPATING INSTITUTIONS TO EFFECTIVELY MANAGE THE PURCHASE OF REQUIRED FERTILIZER INPUTS, THANA AND UNION DISTRIBUTION SYSTEM.

4. THE FY 77 AG INPUTS GRANT PP SHOULD INCLUDE AN ANALYSIS OF THE 40-THANA FERTILIZER DISTRIBUTION IMPROVEMENT PILOT ALONG WITH A DESCRIPTION OF THE QUOTE REFORMS UNQUOTE OR SYSTEM MODIFICATION WHICH BDG IS ADOPTING IMMEDIATELY (OR HAS ADOPTED WITHIN PAST YEAR) ON WHAT WE COULD EXPECT TO BE APPLIED MORE BROADLY IF NOT ON A NATION-WIDE BASIS. AID/W WOULD NOT ANTICIPATE THAT BDG COULD INTRODUCE FURTHER NATIONAL REFORMS BASED ON BASIS OF WHAT MIGHT BE ADDITIONAL RECOMMENDATION OF FERTILIZER SECTOR STUDY COMMISSIONED UNDER ASHUGANJ PROJECT AGREEMENTS. THE RECOMMENDATIONS OF THIS (I.E. THE ASHUGANJ) STUDY -- WHICH WE HOPE AND EXPECT WILL BE QUITE COMPREHENSIVE -- MIGHT WELL BECOME, HOWEVER, THE BASIS FOR NEGOTIATION WITH BDG IN REGARDS TO THE FY 78 FERTILIZER DISTRIBUTION IMPROVEMENT PROJECT. WITH REGARD TO THE FY 77 GRANT, AID/W WOULD VERY MUCH APPRECIATE INDICATION OF THE NATIONAL QUOTE REFORMS UNQUOTE THE BDG HAVE ADOPTED OR YOU ANTICIPATE WILL BE ADOPTED ASAP BUT AT LEAST PRIOR TO SUBMISSION OF PP ITSELF.

5. (Note: This paragraph which pertains only to the FY 1978 PP, and sets forth additional requirements therefor, has been deleted.)

6. IF THE PROJECT IS TO CREATE EMPLOYMENT AND/OR PROVIDE TRAINING, WILL WOMEN HAVE AN EQUAL OPPORTUNITY TO PARTICIPATE? IF EMPLOYMENT IS CREATED, WILL WOMEN RECEIVE EQUAL PAY FOR EQUAL WORK?

ANNEX B

PROJECT TECHNICAL DETAILS

Table of Contents

Projection of Fertilizer Offtakes, Linear Regression Basis (AID)

(a) Annual Offtake Projections

For urea, TSP and MP linear regression analysis was used to project fertilizer offtakes. The analysis was first done using 12 years' offtakes (7/1/64 - 6/30/76) and a second time using only the crop-years where the offtakes were higher than any preceding year.

The "off" years during which fertilizer offtakes were less than the previous year occurred due to supply constraints resulting in the first instance from the disruption of the Liberation War. This was followed by the acute rise in international prices for fertilizer associated with the oil price hike, and finally in 1974 by the explosion at the Ghorasal urea plant. The latter impacted on urea supply, but also affected TSP demand as the two fertilizers are often bought and used together.*/ If these "off" years are dropped out when constructing a trend line, actual annual offtakes are very close to the trend line. It was therefore concluded that the most defensible projections of fertilizer offtakes for the balance of 1976-77 and for 1977-78 and 1978-79 would be based on extension of the offtake trend lines developed without including the years when external constraints depressed supply below demand.

(b) How monthly AID offtake projections were derived

The annual projections were broken down into monthly targets by the following procedure:

The actual monthly offtakes which occurred in 1972-73, 1973-74, 1974-75 and 1975-76 were calculated as percentages of the total offtake for each respective year. These monthly percentages from one year to the next were very close for all the above years except 1974-75; the latter was the year of the explosion at the Ghorasal urea plant, and was therefore excluded. The monthly percentages for the remaining three years were then averaged to arrive at composite figures for each month. These were then applied to the annual offtake projections developed for 1977-78, 1978-79 and 1979-80.

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*/ The "off" years for TSP were 1971-72 and 1974-75; for urea they were 1971-72, 1973-74 and 1974-75.

Source: AID Mission, 1977.

(c) AID Projected Offtakes for Crop-Year 1976-77

To develop monthly figures for the remainder of 1976-77 a different procedure was used. First, actual offtakes for the first seven months (July to January) were divided by target offtakes to obtain a ratio of actual to target offtakes for each fertilizer and for the sum of all three fertilizers.

Second, for the remainder of the year (February to June, 1977) the monthly targets were revised to reflect the actual performance of the preceding months. The February and March targets were reduced by 17 percent, i.e., the same percentage by which the January actual figure fell short of the target. It is believed this shortfall is the result of several factors, including unusually low water levels in January and February and a 34 percent reduction in the number of low-lift pumps placed in operation (17,000 as opposed to 24,000 the previous year).

The projections for April, May and June were revised by the same percentages as the actuals for the same months last year were of the trend line targets.

TABLE 1

AID Monthly Fertilizer Offtake Projections

In '000s' MTs

1977-78	Total	Urea	TSP	MP
July 1977	26.1	19.1	5.6	1.4
August 1977	32.7	19.1	10.9	2.7
September, 1977	53.5	44.0	7.9	1.6
October, 1977	48.0	36.7	9.4	1.9
November, 1977	38.8	23.9	12.3	2.6
December, 1977	39.1	23.9	12.4	2.8
January, 1978	50.2	29.4	17.4	3.4
February, 1978	64.1	41.7	18.5	3.9
March, 1978	62.8	44.7	15.3	2.8
April, 1978	33.2	23.4	7.6	2.2
May, 1978	36.1	27.2	7.2	1.7
June, 1978	48.5	41.5	6.0	1.0
Total	533.1	374.6	130.5	28.0

TABLE 2

AID Monthly Fertilizer Offtake Projections

In '000s' MTs

1978-79	Total	Urea	TSP	MT
July	26.9	19.4	6.0	1.5
August	34.0	19.4	11.7	2.9
September	54.8	44.6	8.5	1.7
October	49.2	37.2	10.0	2.0
November	40.1	24.2	13.1	2.8
December	40.4	24.2	13.2	3.0
January	54.5	32.4	18.5	3.6
February	69.7	45.8	19.7	4.2
March	68.5	49.2	16.3	3.0
April	36.2	25.8	8.1	2.3
May	39.3	29.9	7.6	1.8
June	53.1	45.7	6.4	1.0
	566.7	397.8	139.1	29.8

TABLE 3

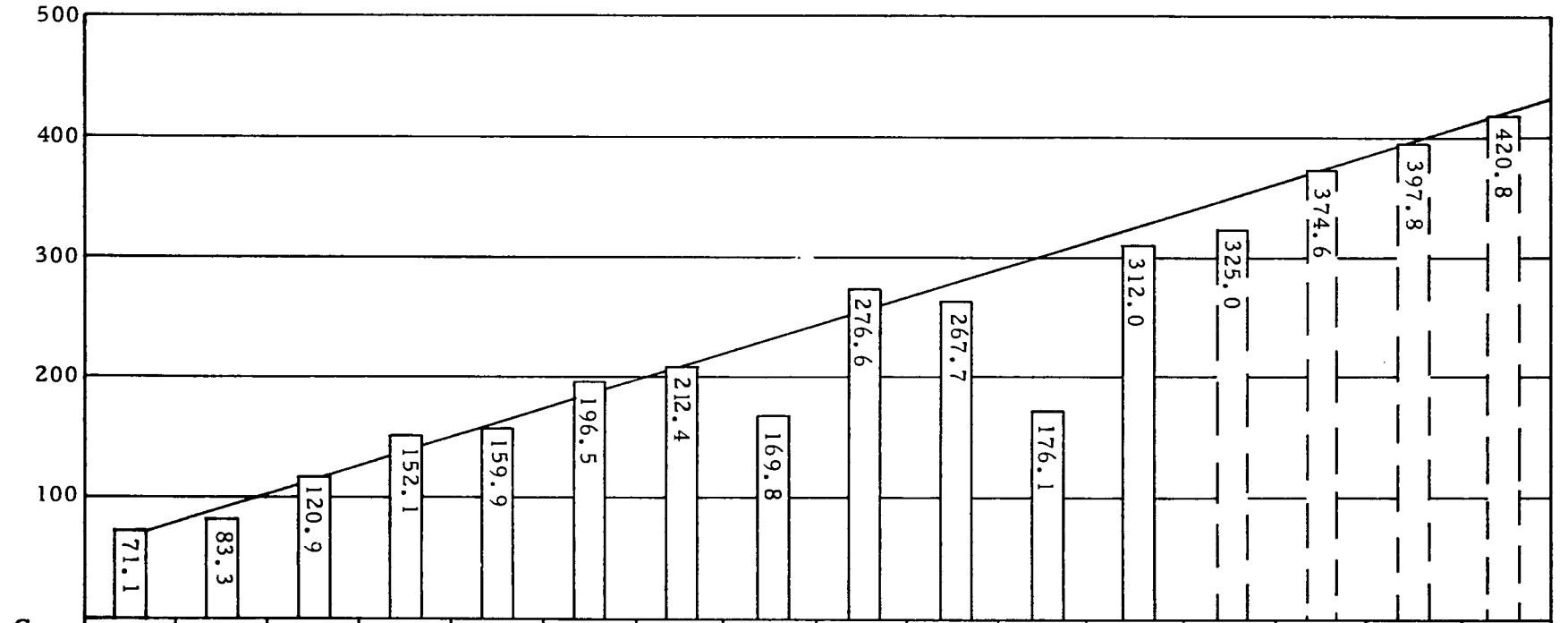
AID Monthly Fertilizer Offtake Projections

In '000s' MTs

1979-80	Total	Urea	TSP	MP
July	27.4	19.6	6.3	1.5
August	35.0	19.6	12.4	3.0
September	55.9	45.1	9.0	1.8
October	50.4	37.6	10.6	2.2
November	41.3	24.4	13.9	3.0
December	41.7	24.5	14.0	3.2
January	58.9	35.4	19.7	3.8
February	75.5	50.1	21.0	4.4
March	74.2	53.7	17.3	3.2
April	39.2	28.2	8.6	2.4
May	42.8	32.7	8.1	2.0
June	57.8	49.9	6.8	1.1
Total	600.1	420.8	147.7	31.6

ANNEX B.1
Attachment 1

UREA FERTILIZER OFFTAKE IN BANGLADESH FROM 1964-5 TO 1979-80

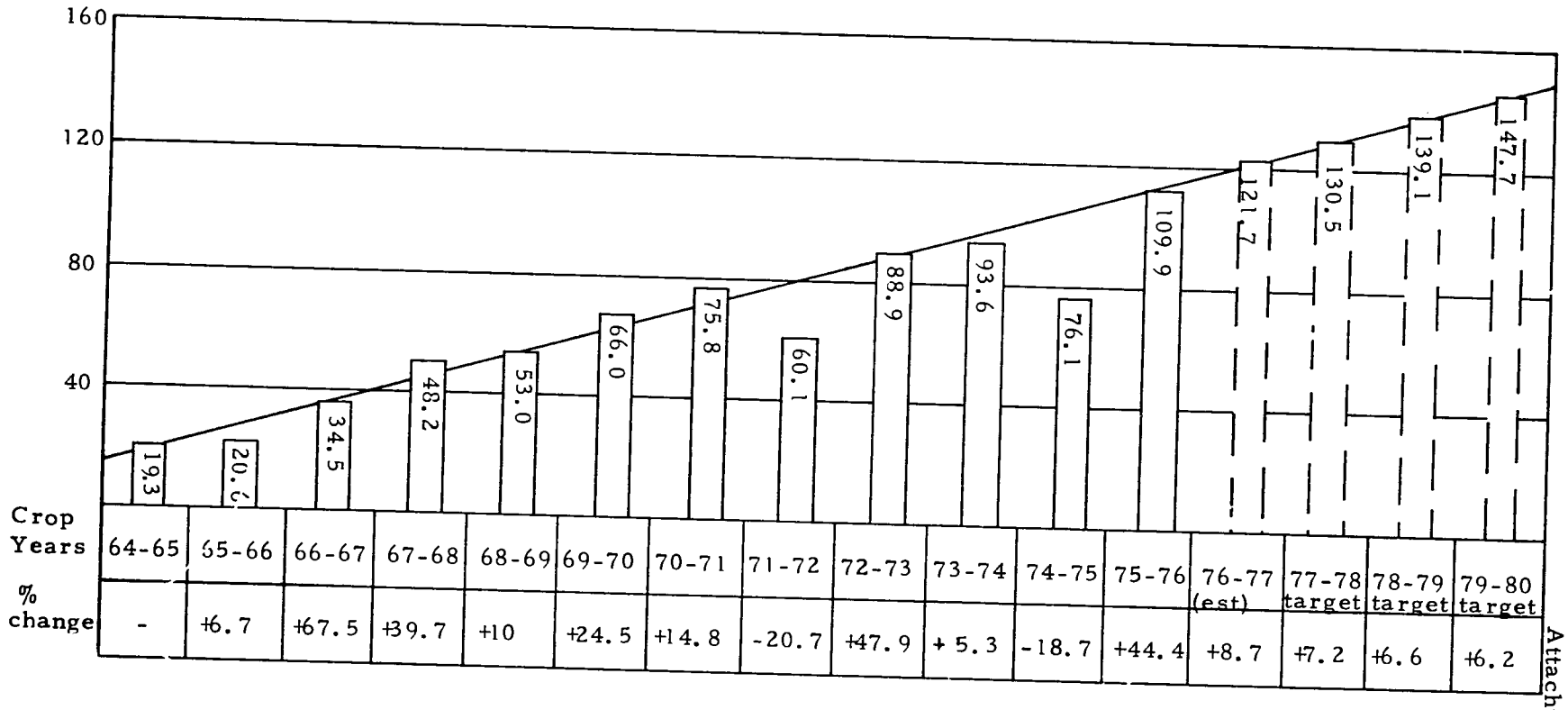


Crop Years	64-65	65-66	66-67	67-68	68-69	69-70	70-71	71-72	72-73	73-74	74-75	75-76	76-77 (est.)	77-78 target	78-79 target	79-80 target
% change	-	+17.2	+45.1	+25.8	+5.1	+22.9	+8.1	-20.1	+62.9	-3.2	-34.2	+77.2	+4.2	+15.3	+6.2	+5.8

ANNEX B.1
Attachment 2

TSP FERTILIZER OFFTAKE IN BANGLADESH FROM 1964-5 TO 1979-80

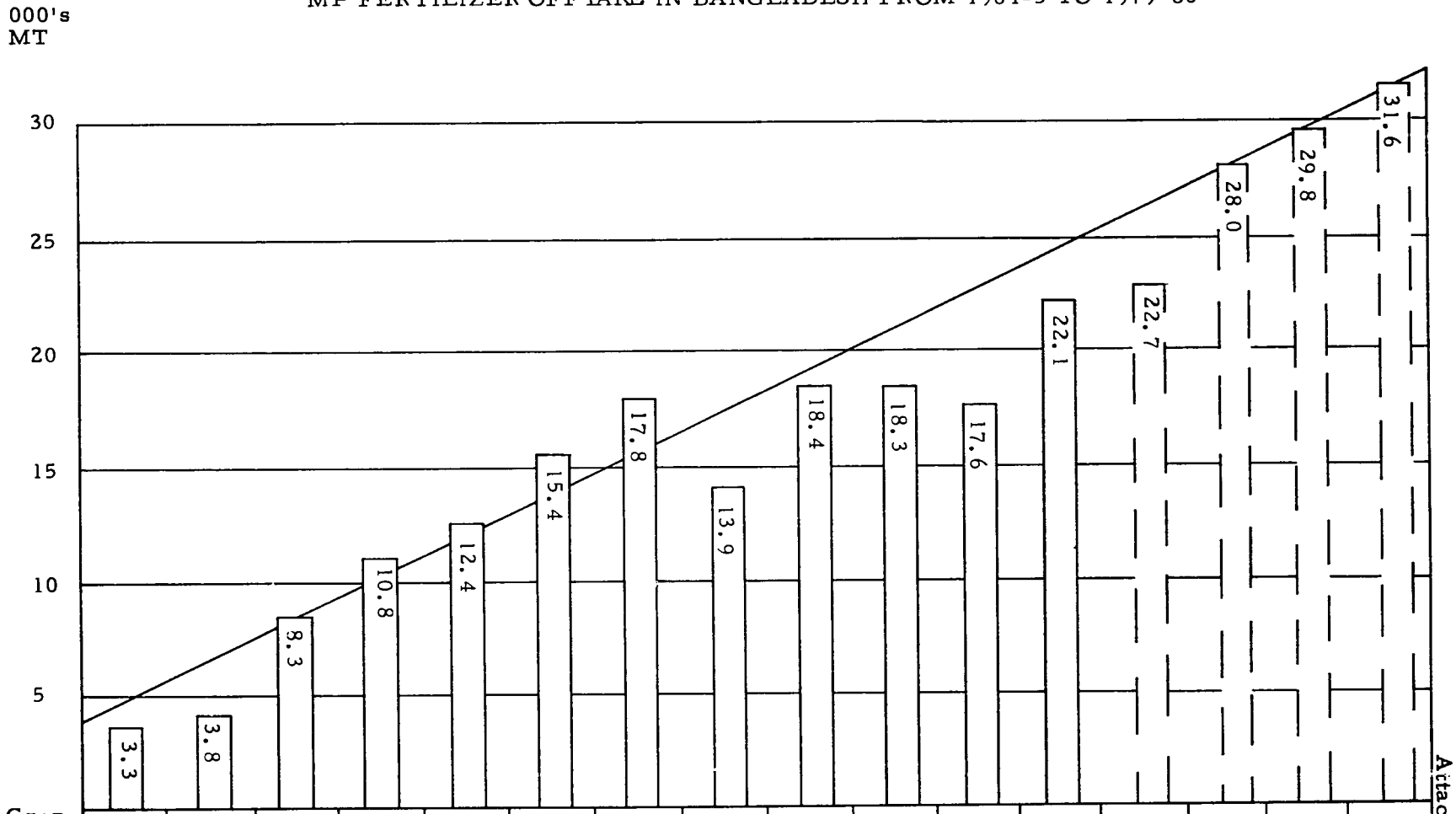
000's MT



Crop Years	64-65	65-66	66-67	67-68	68-69	69-70	70-71	71-72	72-73	73-74	74-75	75-76	76-77 (est)	77-78 target	78-79 target	79-80 target
% change	-	+6.7	+67.5	+39.7	+10	+24.5	+14.8	-20.7	+47.9	+ 5.3	-18.7	+44.4	+8.7	+7.2	+6.6	+6.2

ANNEX B.1
Attachment 3

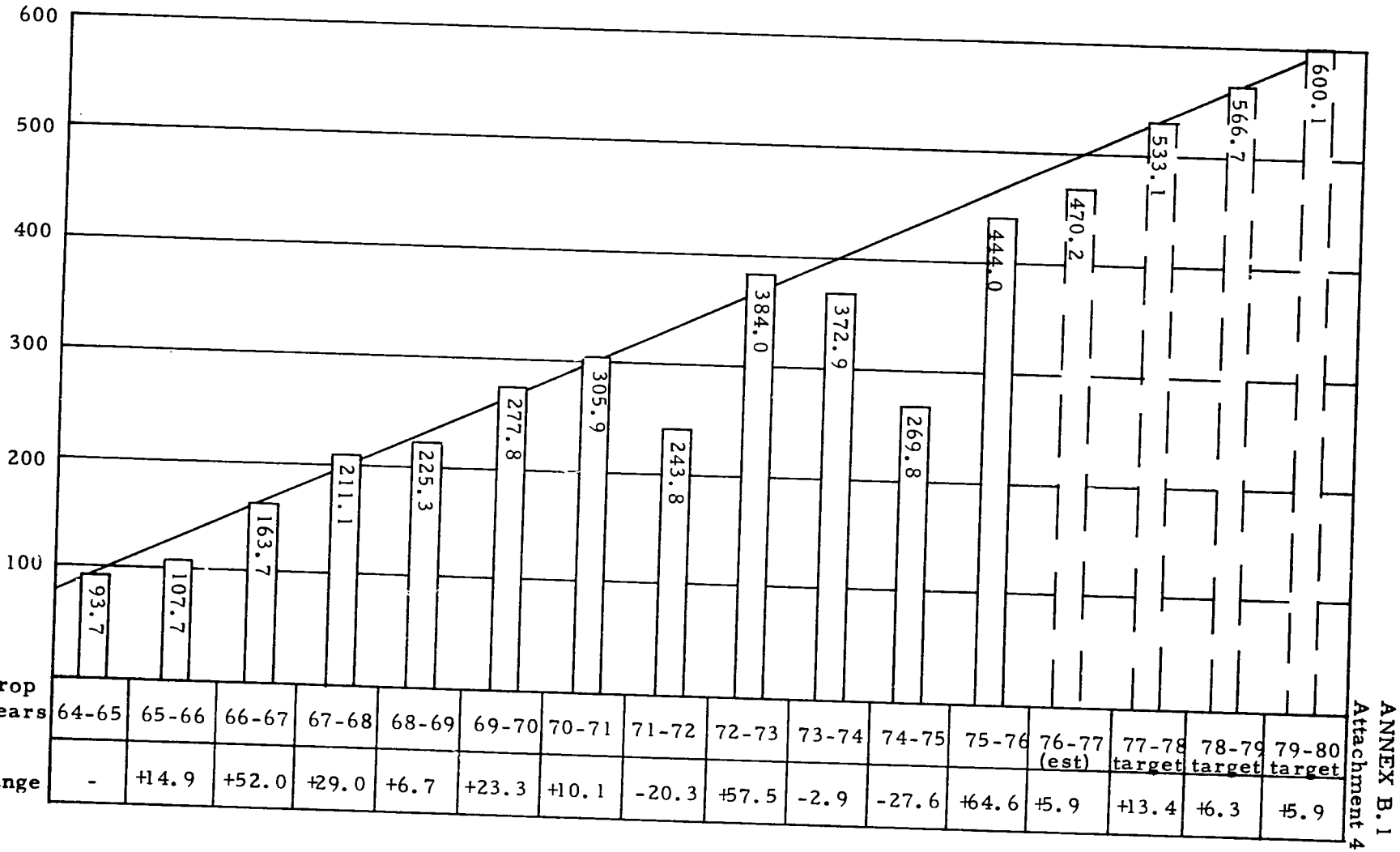
MP FERTILIZER OFFTAKE IN BANGLADESH FROM 1964-5 TO 1979-80



Crop Years	64-65	65-66	66-67	67-68	68-69	69-70	70-71	71-72	72-73	73-74	74-75	75-76	76-77 (est)	77-78 target	78-79 target	79-80 target
% change	-	+15.2	+118.4	+30.1	+14.8	+24.2	+15.6	+21.9	+32.4	-0.6	-3.8	+25.6	+2.7	+23.3	+6.4	+6.0

ANNEX B.1
Attachment 4

TOTAL (UREA, TSP, & MP) FERTILIZER OFFTAKE IN BANGLADESH FROM 1964-5 TO 1979-80



Crop Years	64-65	65-66	66-67	67-68	68-69	69-70	70-71	71-72	72-73	73-74	74-75	75-76	76-77 (est)	77-78 target	78-79 target	79-80 target
% change	-	+14.9	+52.0	+29.0	+6.7	+23.3	+10.1	-20.3	+57.5	-2.9	-27.6	+64.6	+5.9	+13.4	+6.3	+5.9

PROJECTION OF FERTILIZER OFFTAKES CONTAINED IN THE INTERIM REPORT OF THE ASHUGANJ STUDY

	UREA			TSP			MP		
	High Demand	Medium Demand	Low Demand	High Demand	Medium Demand	Low Demand	High Demand	Medium Demand	Low Demand
77-78	396	371	341	153	144	133	42	37	35
78-79	443	402	361	176	161	144	54	45	42
79-80	497	437	377	203	180	155	69	56	50
80-81	557	475	395	233	201	167	89	69	59
81-82	634	524	422	274	229	184	107	81	68
82-83	721	578	450	323	260	204	129	95	77
83-84	821	638	481	380	296	225	156	111	88
84-85	935	704	513	447	337	248	188	130	101
85-86	1064	777	548	526	384	274	227	153	116

SOURCE: Bangladesh Fertilizer Marketing and Distribution Study, Interim Report. The Economist Intelligence Unit, Ltd, January 1977.

ANNEX B. 3.
Page 1 of 2

PROJECTION OF FERTILIZER OFFTAKES PROVIDED BY BADC

M.S. & S. DIVISION
P&S SECTION
21-3-77

Requirement/Availability of Fertilizer for the Year 1976-77

		UREA	T.S.P.	M.P.	TOTAL
A.	Requirement:				
	Actual sale upto Feb '77	208.80	88.41	14.80	312.01
	Expected March-June '77	153.20	49.59	10.20	212.99
	TOTAL:	362.00	138.00	25.00	525.00
	Reserve for Aman '77	125.00	70.00	15.00	210.00
	Total Requirement:	487.00	208.00	40.00	735.00
B.	Availability:				
	i. Stock as on 1.7.76:				
	District godown	125.95	135.57	28.85	290.37
	Transit godown	18.41	38.71	2.79	59.91
	Stock at port shed	-	7.99	-	7.99
	Total stock:	144.36	182.27	31.64	358.27
	ii. Local procurement:				
	Actual upto Feb '77	216.14	17.36	-	233.50
	Expected March-June '77	58.86	22.64	-	81.50
	TOTAL:	275.00	40.0	-	315.00
	iii. Import:				
	Actual upto Feb '77	-	20.45	-	20.45
	Expected March-June '77	50.00	-	20.00	70.00
	TOTAL:	50.00	20.45	20.00	90.45
	iv. Total availability (i+ii+iii)	469.36	242.72	51.64	763.72
	Shortfall/Surplus (-) (+)	- 17 64	+ 34.72	+11.64	
C.	Stock as on 30-6-77	107.36	104.72	26.64	
	Loss-Provision for shortage at 2% on sale	- 7.24	- 2.76	- 0.50	
		100.12	101.96	26.14	

SOURCE: BADC 1977

Requirement/Availability of Fertilizer for the Year 1977-78

(In '000 tons)

		UREA	T.S.P.	M.P.	TOTAL
A.	i) Requirement (as per scheme)	415.00	200.00	35.00	650.00
	ii) Reserve for Aman '78	175.00	75.00	20.00	270.00
	Total Requirement:	590.00	275.00	55.00	920.00
B.	Stock as on 1.7.'77 (including reserve for Aman '78)	100.12	101.96	26.14	228.22
C.	Local production (July to June)	300.00	70.00	-	370.00
D.	Import (Pipe line)	150.00	-	-	150.00
E.	Total availability (B + C + D)	550.12	171.96	26.14	748.22
F.	Surplus/Shortfall (+) (-) (A-E)	-39.88	-103.04	-28.86	

Requirement of Fertilizer for the Year 1978-79

800,000 tons total.

SOURCE: BADC

IMPORT REQUIREMENTS TO MAINTAIN A SIX MONTH BUFFER STOCK

Recent experience in Bangladesh indicates that a stock sufficient for six months' projected offtakes should be kept on hand to cover shipping delays, to permit reasonable planning flexibility if offtakes begin to vary significantly from projections, and perhaps most important, to counter the tendencies to hoarding and blackmarketing which appear if national stocks go down and shortage seems imminent.

The following three tables show projected monthly offtakes for each major type of fertilizer (column 3 on tables 1, 2 and 3). These figures are taken from Annex B.1. The six-month buffer stock figures for each month in column 2 represent the sum of the six succeeding months. The "2% loss factor" in column 4 represents two percent of the month's offtakes. This is the assumed level of losses used by BADC. The Interim Report of the Ashuganj Study uses a figure roughly twice this for losses. Column 5, "Projected Opening Stock", begins in January 1977 with actual stock levels reported as of December 31, 1976 for each type of fertilizer. For subsequent months figures for projected offtakes and losses (columns 3 and 4)are subtracted and those for local production, where appropriate, and imports are added.

Except in the case of MP which is not produced locally, local production figures represent likely production from the local plants. These figures were obtained from the Bangladesh Chemical Industries Corporation (BCIC).

The columns showing " Required Imports " include known imports from other donors, whether required to maintain a six month buffer stock or not, as well as plug figures representing imports needed to keep "Projected Opening Stock" (column 5) at or above "6-month buffer" levels (column 2). The schedule of imports planned for the AID grant is based on these plug figures.

Table 4 summarizes the schedule of ordering requirements needed to maintain a six month buffer stock for all three fertilizers. Committed imports financed by other donors are omitted; therefore the table shows only import requirements unfulfilled as of the date of preparation of the tables.

The table assumes a ten-month lead time from the initiation of the ordering process until arrival of fertilizer into Bangladesh.

TABLE 1
IMPORT SCHEDULE NEEDED TO MAINTAIN
A SIX-MONTH BUFFER STOCK
UREA

1 Month/ year	2 6 Month Buffer	3 Projected Offtakes	4 2% Loss Factor	5 Projected Opening Stock	6 Local Production	7 Required Imports	8 By Quarter	9 Begin Ordering (6 Mo Leadtimes)	10 Value @ $240 MT
1/77	166,000	24,000 a/	480	145,600 a/	25,500 c/				
2/77	161,000	33,956 b/	680	146,620	25,500 c/				
3/77	147,000	36,413	730	137,484	5,500 c/				
4/77	154,000	20,862	420	105,841	5,500 c/	13,000 e/			
5/77	170,000	20,889	420	103,059	19,222 c/	13,000 e/	39,000		
6/77	173,000	29,717	590	113,972	17,500 c/	13,000 e/	(Saudi)		
7/77	147,000	19,100	382	114,165	25,000 d/	13,000 e/			
8/77	177,000	19,100	382	132,683	25,000	13,000 e/	39,000		
9/77	200,000	44,000	880	151,201	25,000	13,000 e/	(Saudi)		
10/77	201,000	36,700	734	144,321	25,000	13,000 e/			
11/77	187,000	23,900	478	144,887	25,000	13,000 e/	39,000		
12/77	191,000	23,900	478	158,509	25,000	13,000 e/	(Saudi)		
1/78	208,000	29,400	588	172,131	25,000	13,000 e/			
2/78	198,000	41,700	834	180,143	25,000	13,000 e/	39,000	30,000	7.20
3/78	176,000	44,700	894	175,609	25,000	13,000 e/	(Saudi)		
4/78	176,000	23,400	468	168,015	25,000	13,000 e/			
5/78	190,000	27,200	544	182,147	25,000	13,000 e/	39,000	29,000	6.96 (14.16)
6/78	187,000	41,500	830	192,403	25,000	13,000 e/	(Saudi)		

(See page 4 following for footnotes)

Tr 1

TABLE 1
IMPORT SCHEDULE NEEDED TO MAINTAIN A SIX-MONTH BUFFER STOCK
UREA

1 Month/ Year	2 6 Month Buffer	3 Projected Offtakes	4 2% Loss Factor	5 Projected Opening Stock	6 Local Production	7 Required Imports	8 By Quarter	9 Begin Ordering (6 Mo Leadtimes)	10 Value @ $240 MT (cum. in paren.)
7/78	169,000	19,400	388	188,073	25,000	5,000 e/		12,000	2.88
8/78	182,000	19,400	388	198,285	25,000	6,000	35,000		(17.04)
9/78	209,000	44,600	892	209,497	25,000	24,000	(Saudi 5,000)		
10/78	213,000	37,200	744	213,005	25,000	2,000	(AID 30,000)	13,000	3.12
11/78	202,000	24,200	484	202,061	25,000	6,000	29,000		(20.16)
12/78	208,000	24,200	484	208,377	25,000	21,000			
1/79	229,000	32,400	648	229,693	25,000			66,000	15.84
2/79	216,000	45,800	916	221,645	25,000		12,000		(36.00)
3/79	190,000	49,200	984	199,929	25,000	12,000			
4/79	186,000	25,800	516	186,745	25,000	13,000		37,000	8.88
5/79	198,000	29,900	598	198,429	25,000		13,000		(44.88)
6/79	192,000	45,700	914	192,931	25,000				
7/79	171,000	19,600	392	171,317	25,000	11,000		3,000	0.72
8/79	187,000	19,600	392	187,325	25,000	26,000	66,000		(45.60)
9/79	218,000	45,100	902	218,333	25,000	29,000			
10/79	226,000	37,600	752	226,331	25,000	4,000		27,000	6.48
11/79	217,000	24,400	488	216,979	25,000	8,000	37,000		(52.08)
12/79	225,000	24,500	490	225,091	25,000	25,000			
1/80	250,000	35,400	708	250,101	25,000				
2/80	234,000	50,100	1002	238,993	25,000		3,000		
3/80	204,000	43,700	1074	212,891	25,000	3,000			
4/80	196,000	78,200	564	196,117	25,000	14,000			
5/80	206,000	32,700	654	206,353	25,000	13,000	27,000		
6/80	211,000	49,900	998	210,999	25,000				

Table 1 (cont.)

a/ Actual - BADC figure.
b/ All subsequent offtake figures are USAID estimates.
c/ BCIC figures.
d/ USAID estimates.
e/ Current information indicates 200,000 MT of Urea will arrive in 13,000 MT monthly tranches. Assuming this schedule is followed reasonably closely, opening stock (column 5) will be below the six-month buffer requirement until March 1978. Because it is expected to increase steadily throughout the period of Saudi imports, no additional imports need be planned during that period. After March 1978 opening stock will exceed the six-month buffer until September 1978, when additional imports will be needed.

AID: 8 August 1977

TABLE 2
IMPORT SCHEDULE NEEDED TO MAINTAIN
A SIX-MONTH BUFFER STOCK
TSP

1 Month/ Year	2 6 Month Buffer	3 Projected Offtakes	4 2% Loss Factor	5 Projected Opening Stock	6 Local Production	7 Required Imports	8 By Quarter	9 Begin Ordering (6 Mo Leadtime)	10 Value @ $190 (Cum. in Paren.)
1/77	52,000	11,164 a/	220	133,600 a/	2,750 c/				
2/77	46,000	11,927 b/	240	124,966	2,750 c/				
3/77	45,000	9,827	200	115,549	5,000 d/				
4/77	43,000	8,176	160	110,522	5,000				
5/77	45,000	6,941	140	107,186	8,332				
6/77	50,000	3,450	70	108,437	7,000				
7/77	59,000	5,600	112	111,917	5,000			12,000	0.38
8/77	71,000	10,900	218	111,205	5,000				
9/77	78,000	7,900	158	105,087	5,000				
10/77	86,000	9,400	188	102,029	5,000			23,000	4.37 (4.75)
11/77	84,000	12,300	246	97,441	5,000				
12/77	79,000	12,400	248	89,895	5,000				
1/78	72,000	17,400	348	82,247	5,000			39,000	7.41(12.16)
2/78	61,000	18,500	370	69,499	5,000		2,000		
3/78	54,000	15,300	306	55,629	5,000	2,000			
4/78	47,000	7,600	152	47,023	5,000	6,000		8,000	1.52(13.68)
5/78	50,000	7,200	144	50,271	5,000	8,000	23,000		
6/78	56,000	6,000	120	55,927	5,000	9,000			

a/ Actual - BADC figures.
b/ All subsequent offtake figures are USAID projections.
c/ BCIC
d/ USAID estimate.

TABLE 2 (cont.)
IMPORT SCHEDULE NEEDED TO MAINTAIN
A SIX-MONTH BUFFER STOCK
TSP

1 Month/ Year	2 6 Month Buffer	3 Projected Offtakes	4 2% Loss Factor	5 Projected Opening Stock	6 Local Production	7 Required Imports	8 By Quarter	9 Begin Ordering (6 Mo Leadtime)	10 Value @ $190 (Cum. in Paren.)
7/78	63,000	6,000	120	63,807	5,000	13,000		14,000	2.66(16.34)
8/78	75,000	11,700	234	75,687	5,000	15,000	39,000		
9/78	83,000	8,500	170	83,753	5,000	11,000			
10/78	91,000	10,000	200	91,083	5,000	5,000		25,000	4.75(21.09)
11/78	90,000	13,100	262	90,883	5,000	2,000	8,000		
12/78	84,000	13,200	264	84,521	5,000	12,000			
1/79	77,000	18,500	370	77,057	5,000	2,000		43,000	8.17(29.26)
2/79	65,000	19,700	394	65,187	5,000	8,000	14,000		
3/79	58,000	16,300	326	58,093	5,000	4,000			
4/79	50,000	8,100	162	50,467	5,000	6,000		9,000	1.71(30.99)
5/79	53,000	7,600	152	53,205	5,000	9,000	25,000		
6/79	59,000	6,400	128	59,453	5,000	10,000			
7/79	67,000	6,300	126	67,929	5,000	14,000		15,000	2.85(33.82)
8/79	80,000	12,400	248	80,503	5,000	17,000	43,000		
9/79	89,000	9,000	180	89,855	5,000	12,000			
10/79	97,000	10,000	212	97,675	5,000	4,000		26,000	4.94
11/79	95,000	13,900	278	95,863	5,000	3,000	9,000		(38.76)
12/79	89,000	14,000	280	89,685	5,000	2,000			
1/80	82,000	19,700	394	82,405	5,000	2,000			
2/80	69,000	21,000	420	69,311	5,000	10,000	15,000		
3/80	62,000	17,300	346	62,891	5,000	3,000			
4/80	53,000	8,600	172	53,245	5,000	7,000			
5/80	56,000	8,100	162	56,473	5,000	9,000	26,000		
6/80	62,000	6,800	136	62,211	5,000	10,000			

TABLE 3

IMPORT SCHEDULE NEEDED TO MAINTAIN
A SIX-MONTH BUFFER STOCK
MP

1 Month/ Year	2 6 Month Buffer	3 Projected Offtakes	4 2% Loss Factor	5 Projected Opening Stock	6 Required Imports	7 By Quarter	8 Begin Ordering (6 Mo Leadtime)	9 Value @ $145 MT
1/77	14,000	3,000 a/	60	20,900 a/				
2/77	13,000	3,511 b/	70	17,840				
3/77	12,000	3,500	50	14,259				
4/77	10,000	1,784	36	10,709	20,000(CIDA)			
5/77	10,000	1,394	28	28,889				
6/77	11,000	682	14	27,467				
7/77	13,000	1,370	27	26,771				
8/77	15,000	2,710	54	25,374				
9/77	16,000	1,570	31	22,610				
10/77	17,000	1,920	38	21,009				
11/77	18,000	2,640	53	19,051				
12/77	17,000	2,820	56	16,358	15,000(CIDA)			
1/78	15,000	3,360	67	28,482			13,000	$1.89 M
2/78	13,000	3,930	79	25,055				
3/78	12,000	2,800	56	21,046				
4/78	11,000	2,150	43	18,190			4,000	0.58 M
5/78	11,000	1,740	35	15,997				(2.47)
6/78	12,000	950	19	14,222				

1 Table 3 Month/ Year	2 (Cont) 6 Month Buffer	3 Projected Offtakes	4 2% Loss Factor	5 Projected Opening Stock	6 Required Imports	7 By Quarter	8 Begin Ordering	9 Value @ $145 MT
7/78	14,000	1,460	29	13,253	5,000		7,000	1.02 M
8/78	16,000	2,890	57	16,764	4,000	13,000		(3.49)
9/78	17,000	1,680	33	17,817	4,000			
10/78	19,000	2,040	41	20,104	1,000		9,000	1.31 M
11/78	19,000	2,810	56	19,023	2,000	4,000		(4.80)
12/78	18,000	3,000	60	18,157	1,000			
1/79	16,000	3,580	71	16,097	2,000		11,000	1.60M
2/79	14,000	4,190	84	14,446	3,000	7,000		(6.40)
3/79	13,000	2,980	60	13,172	2,000			
4/79	12,000	2,290	46	12,132	3,000		6,000	0.87M
5/79	12,000	1,850	37	12,796	3,000	9,000		(7.27)
6/79	13,000	1,010	20	13,909	3,000			
7/79	15,000	1,540	31	15,879	3,000		7,000	1.02 M
8/79	17,000	3,060	61	17,308	5,000	11,000		(8.29)
9/79	19,000	1,780	35	19,187	3,000			
10/79	20,000	2,160	53	20,372	2,000		10,000	1.45 M
11/79	20,000	2,980	60	20,159	2,000	6,000		(9.74)
12/79	19,000	3,190	64	19,119	2,000			
1/80	17,000	3,800	76	17,865	1,000			
2/80	15,000	4,440	89	14,989	4,000	7,000		
3/80	14,000	3,160	63	14,460	2,000			
4/80	13,000	2,430	49	13,237	3,000			
5/80	13,000	1,960	39	13,758	3,000	10,000		
6/80	14,000	1,070	21	14,759	4,000			

a/ Actual -- BADC figure.
b/ All subsequent offtake figures are USAID estimates.

USAID: 20 April, 1977

TABLE 4

SCHEDULE OF ORDERS REQUIRED TO MAINTAIN SIX-MONTH BUFFER STOCK: UREA, TSP & MP

UREA MT	UREA in Dols @ $240/MT	TSP MT	TSP in Dols @ $190/MT	MP MT	MP in Dols @ $145/MT	TOTAL MT	TOTAL in Dols (cum. in paren.)	Date	
								1/77	
								2/77	
								3/77	
								4/77	USG FY 77
								5/77	
								6/77	
								7/77	
								8/77	
								9/77	
		2,000	0.38 M			2,000	0.38	10/77	
								11/77	
								12/77	
		23,000	4.37	13,000	1.89M	36,000	6.26 (6.64)	1/78	
								2/78	
								3/78	
30,000	7.20 M	39,000	7.41	4,000	0.58	73,000	15.19 (21.83)	4/78	USG FY 78
								5/78	
								6/78	
29,000	6.96	8,000	1.52	7,000	1.02	44,000	9.50 (31.33)	7/78	
								8/78	
								9/78	
12,000	2.88	14,000	2.66	9,000	1.31	35,000	6.85 (38.18)	10/78	
								11/78	
								12/78	
13,000	3.12	25,000	4.75	11,000	1.60	49,000	9.47 (47.65)	1/79	
								2/79	
								3/79	
66,000	15.84	43,000	8.17	6,000	0.87	115,000	24.88 (72.53)	4/79	USG FY 79
								5/79	
								6/79	
37,000	8.88	9,000	1.71	7,000	1.02	53,000	11.61 (84.14)	7/79	

The figures above represent quantities and value of fertilizer needed to be ordered by the dates shown in order to maintain a six-month buffer stock in-country. It is assumed that a lead time of six months is required between initiation of an order and its arrival in Bangladesh. Figures exclude urea from Saudi Arabia and MP from Canada for which reasonably firm arrival schedules are available. However, TSP supplied by Netherlands, Norway and Japan are not excluded because arrival schedules are not known.

Source: Tables 1, 2 and 3 preceding.

AID: 8 August 1977

Value/Cost Analysis of Fertilizer Use and Related Analysis of Application Rates

(a) Value/Cost Analysis

With the data presently available it is not possible to give a satisfactory picture of the general shape of response curves either regionally or nationally with respect to the crop yield response to fertilizer use as it is now practised in Bangladesh. The main reason for this is that field trials which have been done so far are almost exclusively at application rates above those actually practiced by the farmers.

Nevertheless, the following analysis based on trials conducted by the Soil Fertility and Soil Testing Institute of Bangladesh is indicative of the value/cost ratios which can be obtained in Bangladesh.

Source: Bangladesh Fertilizer Marketing and Distribution Study (Ashuganj Study) Interim Report 1977.

Table (1) Cereal Response and Value/Cost Ratios

Crop	Application Rate lbs NPK per acre	Yield maunds per acre (paddy)	Response ratio lbs of increased yield per lb of nutrient	Value/cost ratio. Ratio of value of increased yield to fertilizer cost 1975-76*	1976-77*2
Rainfed aus					
IR 8	0 - 0 - 0	22.82	-	-	-
	40 - 40 - 0	30.04	7.4	5.4	3.8
	60 - 60 - 40	43.98	9.4	9.0	5.4
BR 1	0 - 0 - 0	18.19	-	-	-
	80 - 60 - 40	34.89	7.6	6.2	4.7
Irrigated aus					
BR 2	0 - 0 - 0	24.52	-	-	-
	60 - 60 - 40	33.74	4.7	3.9	2.8
	80 - 60 - 40	36.51	5.5	4.4	3.0
	100 - 80 - 60	42.07	6.0	4.9	3.4
IR 8	0 - 0 - 0	26.30	-	-	-
	100 - 80 - 60	51.16	10.2	8.4	5.8
T. Aman					
IR 20	0 - 0 - 0	23.66	-	-	-
	80 - 60 - 40	36.35	5.8	4.7	3.2
	100 - 60 - 40	38.41	6.2	4.9	3.4
	120 - 60 - 40	40.97	6.5	5.1	3.6
	100 - 80 - 60	41.72	6.2	5.1	3.5
BR 4	0 - 0 - 0	22.17	-	-	-
	40 - 0 - 0	29.87	15.8	10.7	7.3
	80 - 60 - 40	46.76	11.2	9.1	6.2
Boro					
IR 8	0 - 0 - 0	28.22	-	-	-
	80 - 60 - 40	47.12	8.6	7.0	4.8
	100 - 80 - 60	58.28	10.3	8.5	5.9
BR 3	0 - 0 - 0	23.52	-	-	-
	40 - 40 - 40	34.59	7.6	6.6	4.6
	100 - 60 - 40	43.69	8.3	6.6	4.6
Local aus	0 - 0 - 0	14.51	-	-	-
	30 - 40 - 20	21.76	6.6	5.4	3.8
Local T. Aman	0 - 0 - 0	17.40	-	-	-
	40 - 40 - 20	25.21	6.8	5.5	3.8
Local Boro	0 - 0 - 0	21.00	-	-	-
	30 - 40 - 20	26.84	5.3	3.6	3.0
	40 - 40 - 20	28.89	6.5	5.2	3.6
Rainfed wheat					
HYV	0 - 0 - 0	13.19	-	-	-
	60 - 60 - 40	28.08	7.6	6.0	5.1
Irrigated wheat					
HYV	0 - 0 - 0	13.28	-	-	-
	100 - 80 - 60	31.66	6.3	5.0	4.2

* Fertilizer prices current in 1st half 1976 and paddy at Tk. 74/maund.

*2 Fertilizer prices current in second half 1976 and paddy at Tk. 60/maund.

Table (2) Response and Value/Cost Ratios for Non-Cereal Crops

Crops	Application rate lbs/acre NPK	Yield maunds/ acre	Response ratio	Value/Cost Ratio 1975-76*	1976-77*2
Potato	0 - 0 - 0	63.25	-	-	-
	150 - 100 - 100	97.54	8.1	7.6	6.5
Sugarcane	0 - 0 - 0	467	-	-	-
	150 - 80 - 80	836	97.8	10.8	9.1
Mustard	0 - 0 - 0	3.90	-	-	-
	20 - 240 - 30	6.39	2.3	6.3	5.4
Lentil	0 - 0 - 0	5.27	-	-	-
	30 - 45 - 30	7.14	1.5	3.1	2.7
Gram	0 - 0 - 0	7.41	-	-	-
	30 - 60 - 45	10.58	1.9	4.1	3.8

* 1st half 1976 fertilizer and crop prices.

*2 2nd half 1976 fertilizer prices.

No good conclusive data is available which would allow us to determine what minimum value/cost ratio is necessary to induce farmers to use fertilizer. In the United States and other "advanced" countries, the use of inputs approaches a ratio of 1:1. But in "developing" countries and in Bangladesh the consensus appears to be that a ratio of 3:1 is required if demand is to be stimulated.

(b) Application Rates

(i) Recommended Rates

The various recommendations current in Bangladesh are summarized in the following tables:

Table 1 - BADC Fertilizer Recommendations

(1) General:

a. Urea - 1 md/acre
b. TSP - 1 md/acre
c. MP - 20 seers/acre

(2) Barind Tract: Some parts of Dinajpur, Bogra and Rajshahi and red soil area - southern part of Mymensingh, eastern part of Tangail, northern part of Dacca, east Comilla and Chittagong Hill Tracts.

a. Urea - 1 md/acre
b. TSP - 1 md/acre
c. MP - 1 md/acre

(3) Saline Tract: Satkhira and Bagerhat sub-division of Khulna district, coastal area of Chittagong and Noakhali districts, Bhola and Pirojpur of Barisal district and Patuakhali district.

a. Urea - 1 md/acre
b. TSP - 1 md/acre
c. MP - 10 seers/acre

For Aus and B. Aman

a. Urea - 1 md/acre

b. TSP - 1 md/acre

c. MP - 20 seers/acre

For HYV Paddy

a. Urea - 1 md 32 seers/acre

b. TSP - 1 md 30 seers/acre

c. MP - 35 seers/acre

For Jute

a. Urea - 1 md/acre

b. TSP - 20 seers/acre

c. MP - 30 seers/acre

For Wheat

a. Urea - 1 md/acre

b. TSP - 1 md/acre

c. MP - 30 seers/acre

For Sugarcane

a. Urea - 2 mds/acre

b. TSP - 1 md 20 seers/acre

c. MP - 1 md/acre

For Potato

a. Urea - 1 md/acre

b. TSP - 1 md/acre

c. MP - 1 md/acre

For Tobacco

a. Urea - 1 md 10 seer/acre

b. TSP - 10 seer/acre

c. MP - 35 seer/acre

Table 2. Fertilizer Recommendations by Bangladesh Soil Fertility and Soil Testing Institute

Rice	Soil Unit	Lbs/acre N	P	K
HYV Aus rainfed				
IR 8	all	60	60	40
BRI (Chandina)	all	80	60	40
BR2 (Mala)	all	60	60	40
BR 3	all	80	60	40
HYV Irrigated Aus				
IR 8	all	100	80	60
BR 1 (Chandina)	all	80	60	40
BR 2 (Mala)	all	100	80	60
BR 3	all	100	60	40
HYV Transplant Aman				
IR 20	2	100	60	40
	9, 10, 17	120	60	40
	4, 7, 15, 18, 19	100	80	60
IR 5	all	120	120	80
BR 4	all	80	60	40
HYV Boro				
IR 8	all	100	80	60
BR 1	all	100	60	40
BR 2	all	100	80	60
BR 3	all	100	60	40
Purbachi	all	100	80	60
Local Aus				
	1, 2	30	40	20
	10	40	40	20
	9, 16	40	40	40
	6, 15, 20	60	40	20
	3, 4, 5, 7, 14 18, 19	60	60	40

Table 2. Fertilizer Recommendations by Bangladesh Soil Fertility and Soil Testing Institute (continued)

Rice	Soil Unit	Lbs/acre N	P	K
Local Transport Aman	1, 10	40 -	40 -	20
	3, 9	40 -	40 -	40
	2, 5, 14	60 -	40 -	20
	6	60 -	40 -	40
	Others	60 -	60 -	60
Local B. Aman	4, 10, 15, 17	40 -	40 -	40
	6, 7, 8	60 -	60 -	40
Local Boro	4	60 -	40 -	40
	6, 7, 8	60 -	60 -	40
Other crops				
HYV Wheat rainfed	all	60 -	60 -	40 -
irrigated	all	100 -	80 -	60
Local Wheat	4, 10, 15	40 -	40 -	40
	6	60 -	60 -	40
	3, 7	60 -	60 -	40
	all	150 /175 -	100 -	100
	all	150 -	80 -	80
	all	20 /30 -	30 /60 -	15/30
	all	30 -	45/60 -	30/45
	all	30 -	45 -	60

Table 3. BRRI Recommendations

		Lbs NPK/acre	Maunds urea/TSP/MP per acre	
Aus	BR 1, BR 2, BR 3, IR 8	75 - 60 - 40	2 - $1\frac{1}{2}$ - $\frac{3}{4}$	
Aman	IR 5, IR 20			
	BR 1	40 - 30 - 25	1 - $\frac{3}{4}$ - $\frac{1}{2}$	
Boro	BR 1, BR 2, IR 8, Purbachi	85 - 75 - 60	$2\frac{1}{4}$ - 2 - $1\frac{1}{4}$	
	BR 4	60 - 60 - 40		(Barind, Teesta, Madhupur Tract)
		60 - 60 - 20		(Gangetic floodplain & coastal areas)

Table 4. General Recommendations
Source: Interim Report of the Ashuganj Study

HYV Paddy	Lbs NPK/acre			Maunds urea/TSP/MP per acre		
BRRI (Zaman)	60	60	40			
(Islam)	80	60	40			
Min. Agr. (Extension)	75	75	50	2	2	1
(Brammer)	100	60	40	2½	1 3/4	1
FAO/NORAD as recommended by SFI: IR 20Aman	85	85	45			
BR 1 Boro	100	80	60			
Local Paddy						
Min. Agr. (Extension)	40	40	20	1	1	1/2
(Brammer)	40	40	40	1	1	3/4
FAO/NORAD (SFI)						
Aman	50	50	45			
Boro	606	60	40			
Sugarcane						
Min. Agr. /Sugar						
Corp. Northern	115	115	115	3	3	3
Central	115	75	75	3	2	2
Southern	115	115	75	3	3	2
Jute						
Jute Res. Institute	40	10	20	1½	1/4	½
with 50 mds cowdung	23	3	1			

(ii) Actual Application Rates

In comparison with the above, actual applications rates are much lower. On a national basis, information from BADC and the Ministry of Agriculture indicates that the average intensity of fertilizer use per net cropped acre is as follows.

Year	Fertilizer Sales in Nutrient Tons	Net Cropped Area	Pounds of Nutrient Per Acre
1965-66	50,000	22,500,000	5.0
1966-67	77,000	22,500,000	7.7
1967-68	98,000	22,500,000	9.8
1968-69	105,000	22,500,000	10.5
1969-70	130,000	22,500,000	12.9
1970-71	143,000	22,500,000	14.2
1971-72	114,000	22,500,000	11.3
1972-73	179,000	22,500,000	17.8
1973-74	177,000	22,500,000	17.6
1974-75	130,000	22,500,000	12.9
1975-76	212,000	22,500,000	21.1

Using figures provided by BADC and the IBRD study entitled "Development in a Rural Economy", the Interim Report of the Ashuganj Study contains the following estimate of fertilizer use by crop during the year 1975-76.

Crop	Average intensity of use (lbs prod./acre)	Total use (1000 tons prod.)
Aus local	11.5	36
HYV	138	54
Broadcast aman	-	-
Transplant aman local	15.6	58
HYV	118	72
Boro local	59	32
HYV	198	140
Total rice	35	392
Wheat HYV	54	5
Total cereal	35	397
Jute	27	20
Sugarcane (mill areas only)	147	10
Miscellaneous crops 1/	20	27
Total	34	454 2/

1/ including sugarcane outside mill areas, local variety wheat, but excluding tea.

2/ Small quantities of HP, NPK, SP in use have been expressed in terms of their nutrient equivalent as Urea, TSP or MP (product).

With respect to fertilizer application rates by types of farmers the information available is very incomplete. The Land Tenure Study currently being conducted by USAID has revealed that the types and classes of farmers are so varied as to make the terms "large farmer" and "small farmer" much less accurate than they were originally thought to be. Nevertheless, during the course of the Pilot, USAID has collected data from 40 thanas with respect to fertilizer use by small farmers defined as those who farm two acres or less, medium farmers (2-5 acres), and large farmers (over 5 acres).

It was learned conclusively that almost all farmers of all sizes are aware of what fertilizer is and use it to some degree or have used it to some degree in the past. The general use level for small farmers, who purchase at all, varied from 30 seers to 1 maund of urea, 20 seers to 30 seers of TSP, and 10 to 15 seers of MP per acre. The general use level for medium farmers, who purchased at all, varied from 25 to 30 seers of urea, 20-25 seers of TSP and 10-15 seers of MP per acre.

In comparing the small, medium and large farmers, it was found that the medium farmers were over all the most motivated group and usually tried to use the recommended doses of fertilizer in HYV paddy and wheat. For local varieties of rice, they tried to use near the recommended doses. The small farmers were more often unable to use fertilizer for lack of cash or were discouraged for some other reason. The large farmers were found to be the least motivated towards fertilizer use and usually applied considerably less than the recommended doses, except on HYV.

In developing the FY 78 Fertilizer Development Improvement Project, USAID will conduct a sample survey based upon the definitions of farmer type developed in the Land Occupancy Study in order to get a more accurate picture of fertilizer use by type of farmers.

Projection of Local Fertilizer Production

In thousands of Metric Tons

	Urea	TSP	MP
1977	243	55	None
1978	300	60	None
1979	300	60	None
1980	300	60	None

Source : Bangladesh Chemical Industries Corporation (BCIC) and AID Mission 1977.

FERTILIZER BEING PROVIDED BY OTHER DONORS

YEAR OF ARRIVAL IN BANGLADESH	UREA	TSP	MP
CY 1977	100,000 a/	19,000 b/	20,000 c/
1978	100,000 a/	19,000 b/	15,000 c/
1979			
1980			

a/ Saudi Arabia is providing 200,000 MT in monthly tranches which are expected to be completed in June or July 1978.

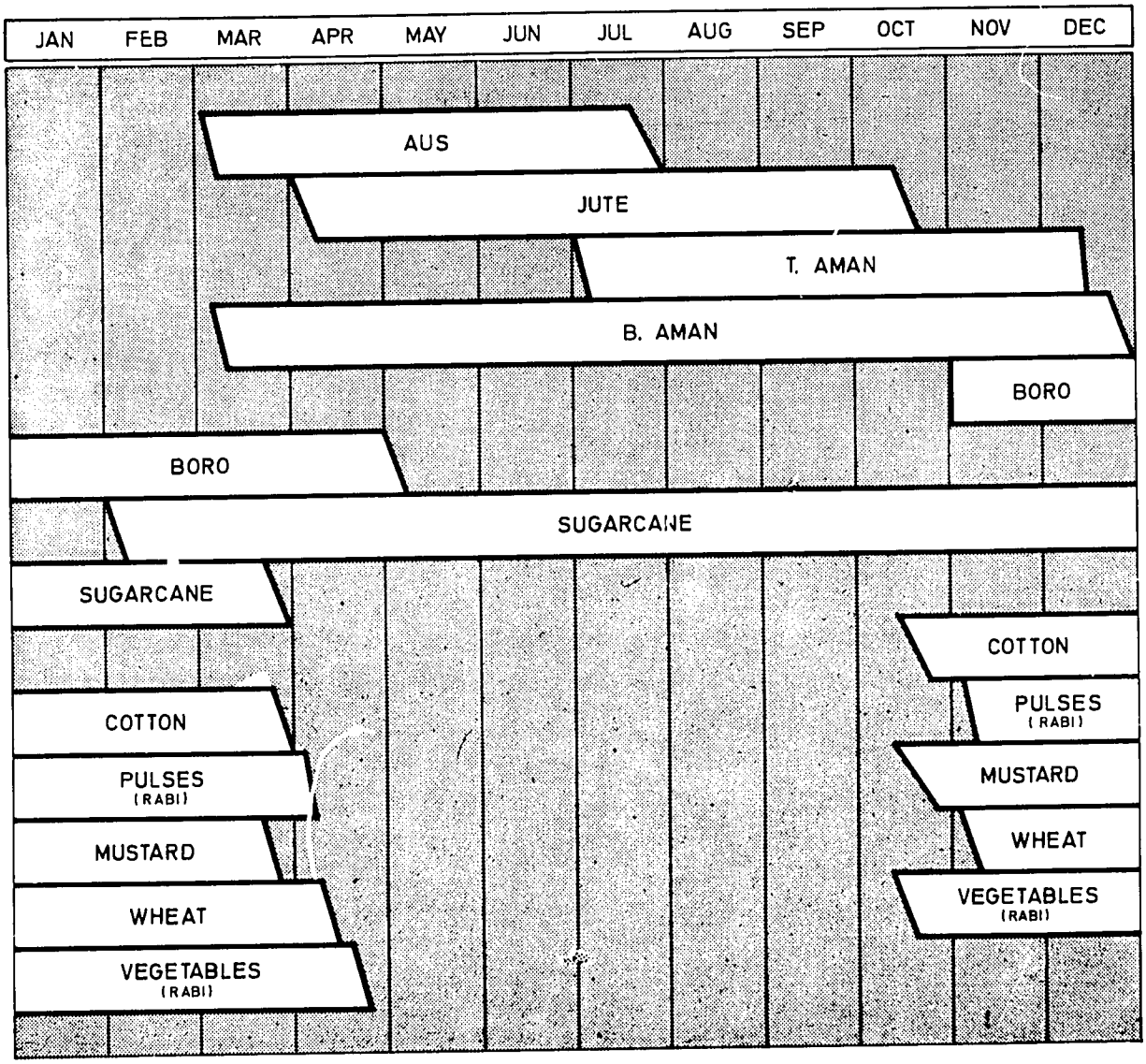
b/ A total of 38,000 MT of TSP is to be provided during CY 1977 and 1978. Delivery schedules are not known, and so the total is split between the two years for purposes of this table. Donors are as follows:

Netherlands	12,000 MT
Norway	11,000
Japan	15,000
TOTAL	38,000

c/ Canadian International Development Agency (CIDA): 10,000 MT in March 1977; 10,000 MT in June 1977, and the remaining 15,000 MT in 1978, but not scheduled yet.

Source: BADC, 1977 and U.S. Fertilizer Industry Sources.

CALENDAR FOR MAJOR CROPS AND EXISTING CROPPING PATTERNS IN BANGLADESH



Existing Cropping Patterns:

1. AUS/JUTE + T. AMAN
2. AUS + T. AMAN + KHESARI (LATHYRUS)
3. JUTE + KALAI (PULSE)
4. AUS AND T. AMAN MIXED
5. AUS + MUSTARD/PULSES/RABI VEGETABLES/ TOBACCO/COTTON/POTATO
6. AUS AND ARHAR (CAJANUS)/ TIL (SESAMUM) MIXED.
7. B. AMAN
8. AUS AND B. AMAN MIXED.
9. BORO
10. SUGARCANE
11. SUMMER VEGETABLES + MUSTARD/PULSES

BADC
DIGEST OF CORPORATION CHARTER

1. Name	:	Bangladesh Agricultural Development Corporation (BADC).
2. Address	:	49-51 Dilkusha Commercial Area (Krishi Bhaban), Dacca-2
3. Date of Establishment and background	:	The Bangladesh Agricultural Development Corporation came into being on the 16th of October, 1961. The Corporation was established by promulgating an ordinance, namely the East Pakistan (now Bangladesh) Agricultural Development Ordinance, 1961. Based on the recommendations of the Report of the Food & Agricultural Commission, set-up by the then Government of Pakistan, the Bangladesh (East Pakistan) Agricultural Development Corporation was set up with the sole purpose of relieving the Directorate of Agriculture, Govt. of Bangladesh (East Pakistan) from the commercial functions (supplies and services) so as to enable the Directorate to devote itself heart and soul to the education of the farmers, extension services, research activities, etc. The Corporation has been entrusted to carry on the supply and services functions on a commercial basis.
4. Functions of the Bangladesh Agricultural Development Corporation as per Charter (with replacement of words to suit the present status as an autonomous body under the Government of the People's Republic of Bangladesh)	:	1. The Corporation shall:-
	:	(a) make suitable arrangements throughout Bangladesh, on a commercial basis, for the procurement, transport, storage and distribution to farmers of essential supplies, such as seed, fertilizers, plant protection equipment, pesticides and agricultural machinery and implements:

provided that some or any of such supplies may be free or subsidized with the previous approval in writing of the Government.

Provided further that, as far as practicable, these supplies shall be distributed through cooperative societies.

(b) Promote the setting up of cooperative societies with a view to handing over to them its supply functions in accordance with a phased programme;

(c) encourage the development of cooperative societies in other spheres in which the Corporation is interested;

(d) if so directed by the Government, take over and manage, on such terms and conditions as may be specified by the Government, such seed multiplication and livestock breeding farms and fruit nurseries as are owned or managed by the Government; and

(e) assist, encourage and promote the manufacture of improved agricultural machinery and implements, but not itself undertake any such manufacture:

Provided that it shall, if so directed by the Government, take over, on such terms and conditions as may be specified by the Government, any concern owned or managed by the Government and engaged in such manufacture.

2. In addition to the functions enumerated in sub-section 1 the Corporation may:-

(a) give loans in kind, and if so directed by the Government, shalldo so, for such purposes as may be prescribed by regulations;

(b) assist, encourage, and promote the establishment of industries for the processing of agricultural produce, the formulating or manufacturing of insecticides, pesticides, fungicides or biologicals or the manufacturing of cattle and poultry feed;

(c) (i) Organize the supply, maintenance and operation of lift-pumps and tubewells and set up light workshops for running repairs;

(ii) supply, operate and maintain lift pumps and tubewells for the supply of water for irrigation or other purposes;

(iii) operate and maintain tractors and other implements for the supply of mechanised cultivation services;

(iv) receive, by transfer, schemes for mechanised cultivation and power pump irrigation from the Government or any other agency, if any, under the administrative control of the Government, and, on transfer, any amount due to the Government or such other agency, on account of hire charges of tractors, power pumps and other implement, shall be deemed to be the dues payable to the Corporation.

(d) in accordance with Government policies, encourage the expansion and improvement of industries for the manufacture of diesel engines used in agriculture, the setting up of cold storage plants, the renewal and establishment of ginneries, oil expellers, jute presses and rice huskers;

(e) if adequate facilities for servicing machinery are not available in Bangladesh make suitable arrangement with any outside agency for providing such facilities;

(f) where adequate transport facilities are not available, provide or maintain suitable transport of its own, and if existing public or private transport agencies are unable to provide such facilities to the Corporation, assist financially or otherwise, public or private interests in setting up suitable transport services for the use of the Corporation;

(g) carry out or cause to be carried out surveys of the problems and potentials of any area proposed to be declared a project area and incur expenditure on such surveys, on the training of personnel, and on studies, experiments and technical research; and

(h) contribute towards the cost of any studies, surveys, experiments or technical research connected with the functions of the Corporation and undertaken or done by any other person, body or agency.

3. Additional functions in Project Areas:-

(a) shall organize the dissemination of technical knowledge among farmers with a view to ensuring intensive and coordinated use of improved seeds, fertilizers, plant protection materials, better cultivation techniques, and credit, including supervised credit;

(b) shall deal with all matters pertaining to land reclamation, range management, dairy industry, organization of agriculture in new areas, harnessing of hill streams, conservation of catchments, exploitation of potential areas, planned agriculture through suitable crop rotation and mixed farming, marketing and processing of agricultural produce and organization of co-operative and block farming;

(c) shall organize supervised credit and linking of credit with marketing through cooperative societies;

(d) shall supervise cash credit in such manner as may be prescribed by the regulations;

(e) shall perform all functions, which immediately before the setting up of the BADC were being performed in such area by the Ministries dealing with agriculture, animal husbandry, livestock, cooperative societies, fisheries, forests and consolidation of holdings;

(f) may undertake distribution of water for irrigation;

(g) may undertake anti-salinity measures;

(h) may assist, encourage and promote the use of agricultural machinery; and

(i) may organize, or enter into contracts for, such research as may be necessary for carrying out its functions, including research in land and water utilization.

The Pilot Project - Description, Evaluation and Features to be Incorporated in the FY 1977 Project as a Result of the Pilot

I. Description of the Pilot

The idea for the pilot came out of the discussions conducted for the FY 1976 Agricultural Inputs III Project. Although that project did not proceed, it was agreed by AID and BADC to continue with the pilot which had in fact already begun. The purposes of the pilot were in two categories: points to be tested and additional information to be collected. The items tested were:

i - Flexible mark-up;
ii - Direct retail sales from thana godown;
iii - Adequate reserve stock;
iv - Unrestricted access of farmers to any dealer in the thana.

The pilot testing was phased as follows:

Phase I - From February 1, 1976 until March 31, 1977 included 21 thanas:

- Flexible mark-up in 10 thanas;
- Direct sales in 10 thanas;
- Both flexible and direct sales in 1 thana.

Phase II - From May 26, 1976 until March 31, 1977

- Included 19 thanas testing both flexible mark-up and direct sales.

In both phases, for all pilot thanas it was attempted to maintain adequate reserve stocks and farmers were permitted to purchase fertilizer from any dealer, rather than be restricted to a single dealer in his immediate area. Phase I continued during the entire term of Phase II.

Additional information from the pilot thanas was to be collected including:

Land utilization statistics;
Number of unions, villages and farm families;

Acres per farm and percent of land cropped;
Central storage capacity;
Number of dealers, farms per dealer and acres per dealer;
Names and locations of dealers;
Fertilizer sales from 1972 to present;
Records of monthly fertilizer transactions, including beginning and ending inventories, arrivals and sales from July 1, 1975;
Location of reserve stocks; and
Acreage under local and HYV rice and wheat cultivation.

It was recognized at the outset of the pilot that the information collected might lead to conclusions beyond the specific points being tested. It was also understood that if the results of a particular test or the import of information collected were to become apparent during the course of the pilot that these might be implemented quickly without waiting for the pilot to be completed. As the discussion below shows, this in fact happened several times. It was in this climate of cooperative experimentation that the pilot was begun and carried out.

II. Evaluation of the Pilot

A. Flexible Mark-up

This was by far the principal and most important innovation in the pilot.

During the first phase of the pilot, February 1 to May 25, 1976, the sales of each of the 11 pilot thanas under the flexible mark-up procedure declined because of the heavy inflow of fertilizer from surrounding non-pilot areas. This frustration of the pilot was due to the fact that all dealers in these 11 pilot thanas were no longer allowed the standard wholesale distribution and were therefore forced to purchase fertilizer at the national retail prices. Thus the flexible mark-up pilot dealers, in effect, were purchasing their fertilizer at less subsidized rates than the non-pilot dealers and could not compete with the non-pilot dealer prices.

On May 26, 1976 sales procedures to the flexible mark-up pilots were changed setting these pilot dealers' purchase costs at Tk 4 per maund less than the national retail prices. Thus from May 26, 1976 onward pilot dealers could flexibly mark-up their selling prices from

this lowered purchase cost to cover their transportation and handling cost as well as reasonable profit while still having their resultant selling price competitive with non-pilot dealer prices.

The maximum allowable flexible mark-ups as a percent of the nationally set retail prices were 11.7 percent for urea, 12.5 percent for TSP and 15.0 percent for MP. These maximum gross profit percentages were achieved when a distant pilot dealer having acquired urea, TSP and MP for Tk 56, 44 and 36 per maund respectively, sold these fertilizers in turn at Tk 63, 50 and 42 per maund respectively. The pilot dealers were allowed to sell at these prices to cover costs and make a small profit, even though the nationally set retail prices were (and still are) Tk 60, 48 and 40 per maund for urea, TSP and MP. In actuality the retail prices being charged by dealers nationwide, non-pilot as well as pilot thanas have been found frequently to be above the nationally set prices for the same reason, i.e., so that dealers can cover their costs and make a profit averaging about Tk 2 per maund. Under these changed pilot procedures, the inflow of fertilizer from non-pilot thanas stopped in June 1976 and we have no evidence of any continuation or reoccurrence of large amounts of fertilizer flowing from non-pilot thanas to pilot thanas.

To understand the real importance of this flexible price innovation, it is necessary to comprehend the pricing and discount system as it exists nationwide as well as how it worked under the flexible mark-up in the pilot. The current system is as follows: (in taka/maund)

Four Tier Distance Commission System

Miles Distance	Commission	Dealers Pay BADC For Urea	TSP	MP
0 - 3	3.5	56.5	44.5	36.5
3 - 6	4.0	56.0	44.0	36.0
6 - 9	4.5	55.5	43.5	35.5
Over 9	5.0	55.0	43.0	35.0
Standard retail price		60.0	48.0	40.0
No flexible mark-up		0.0	0.0	0.0
Maximum dealer's price to farmer		60.0	48.0	40.0

Compared to this nationwide system the flexible mark-up system worked as follows: (in taka/maund)

Flexible Mark-up System

Miles Distance	Commission	Dealers Pay BADC For		
		Urea	TSP	MP
All distances	4.0	56.0	48.0	36.0
Standard retail price		60.0	48.0	40.0
Flexible mark-up		3.0	2.0	2.0
Maximum dealer's price to farmer		63.0	50.0	42.0

It was hoped that allowing the dealers to charge a flexible price would encourage competition and that the increased allowable maximum margins would encourage the dealers to compete and to service the distant areas considering that they were permitted to charge more to cover costs. It was hoped that this would lead to an overall increase in sales.

The results of this experiment were mixed and not entirely conclusive:

(1) Competition - In 19 thanas competition was observed among dealers charging different prices and competing with each other. In seven thanas it appeared there was no dealer competition. In the other thanas data was not collected on competition. While there is also competition under the four tier distance commission system with dealers sometimes charging less than the retail price (this is allowed), it was judged by both AID and BADC, during field observations, that there was an overall increase in competition between dealers under flexible mark-up. (See Table I at the end of this Annex.)

(2) Effect on Sales - Sales in the pilot thanas decreased one percent while sales nationally increased 13 percent. But the results were far from uniform and while in 20 thanas there were decreased sales, still in 10 thanas there were increased sales. (See Table II at the end of this Annex.)

One complicating factor was the fact that in eight border thanas smuggling across the border from Bangladesh was thought to inflate the base sales data for the period from July through December 1975. For this reason it was agreed that these border thanas could be dropped from the pilot, but BADC retained them until January 1977. But if one drops them from consideration, then there is a nine percent increase in sales in the remaining 22 thanas. This change is in the direction one would expect.

Turning from the national to the district scale, comparison is made of the sales results of the 22 non-border thanas with the sales results of their respective districts. (See Table III at the end of this Annex.) The comparison again produces inconclusive results. The percent increase for the total of the districts is 16 percent as compared to the nine percent increase for the thanas. Out of the 11 districts represented, in seven cases the district performance was superior and in only four cases was the pilot thana experience superior.

The obvious conclusion is that many other factors must have been involved in determining the changes in sales besides the flexible mark-up. On a national basis, the increase in sales (13 percent) is attributed primarily to the increased availability of fertilizer, the elimination of shortages and the elimination of the blackmarket. In a number of the pilot thanas with increases in sales (especially Gangachara, Dhunat, Khetlal and Bhanga) there is good reason to believe that the increase is primarily due to these same reasons. In several of the thanas (e.g., Kaliganj) it is believed that the decrease in sales from the thana godown is due to the inflow of fertilizers from adjacent thanas. In a larger number of thanas (including Gopalganj, Moulvi Bazar, Feni and Sudharam) the decrease is attributed to flood damage to crops. Another factor at work was the drop in paddy price from 1975 to 1976 which had a depressing effect on fertilizer sales, and more so in some areas (e.g., Ullapara, Atgharia, Natore, Mathbaria and Lalmohan) than in others. Several of these factors and others were often at play at the same time and appear to have overriden the effect of the flexible mark-up on sales.

From field observation, it appears that the flexible mark-up had mixed effects on fertilizer sales. On the one hand, it often increased competition especially in the areas near the thana godown. But on the other hand, a fair number of the field reports recorded a decrease

in sales in distant areas and report that dealers from distant areas were (contrary to the BADC rules) selling all their fertilizer near the thana godown and not taking it to the distant areas because they were not receiving any extra discount for doing so. These effects of course are directly contrary to the purpose of the trial and tended to reduce the net effect of the flexible mark-up.

B. Direct Sales

During the conduct of the pilot, 11 Phase I thanas and all 19 Phase II thanas were to experiment with thana godown direct retail sales to farmers. This addition to the existing national fertilizer distribution system was intended as a protective device to provide an option for the small farmer should dealer prices go too high. The thana godown was to be an alternative place for the farmer to buy fertilizer at a set price should he decide that it was in his interest to do so. However, during the entire 14 months of the pilot, direct retail sales to farmers from thana godowns only occurred in a few Phase I thanas during the first several months of Phase I. In a way, the absence of this type of sales is considered positive as it was not intended that thana godowns become burdened with excessive numbers of small retail sales. At the same time, it cannot be concluded that the lack of such sales indicated that this feature was working as a motivation to dealers to keep their prices competitive with the direct sales set prices. On the contrary, in more than a few direct sale Phase I and Phase II pilot thanas, field visits during the course of the pilot found farmers purchasing from dealers selling in excess of the maximum retail prices. In talking to these farmers it was discovered that the farmers and even Union Agricultural Advisors were not aware of the thana godown direct sales option. Though BADC had issued directives to its field staff to implement this procedure, it apparently had not been carried out. Thus, this alternative procedure remained generally unknown to most farmers.

After sufficient documentation of the lack of farmer awareness of the thana godown direct sales option, BADC in January, 1977 decided to publicize this pilot feature. On January 27 BADC ran articles about thana godown direct sales on the front pages of both national papers; and in the following month 15 days of national radio spots were aired. This publicity occurred, however, too late for the

impact to be measured by the last round of field visits. Thus no determination from the pilot can be made as to whether, when farmers are aware of it, the thana direct retail sales option works as intended.

An additional inhibitor to the direct sale option arose when BADC in October, 1976 made a nationwide change in thana sales procedures for other reasons. At that time BADC changed all thana level sales (sales to dealers as well as direct sales to farmers) from a cash basis to a payment by bank order procedure. This was done to relieve BADC field staff of the responsibility of handling the huge amounts of cash involved in fertilizer sales to dealers and to provide another means of accountability. For the dealers this procedure is apparently no problem and it is also not so complicated that farmers are not capable of following it. But it is certainly more complicated for the purchaser than a cash purchase, and for many farmers it is likely to be a disincentive.

C. Adequate Reserve Stocks

About the time that the pilot began, supplies of fertilizer in Bangladesh began to reach adequate levels countrywide. All pilot thanas and all other thanas had adequate reserve stocks. This provision was just a precondition to the working of other aspects of the pilot and was not really on test.

D. Unrestricted Farmer Purchase

As a result of the fertilizer shortages in 1974 and 1975 (occurring largely as a result of an explosion at the Ghorasal urea factory) a complicated system of fertilizer rationing and allocations tied to individual farmers and specific crops by thana committee was introduced in order to try to control the price to the farmers and to enforce a rational distribution. Under this system, each farmer registered with a single dealer in his union and was allowed to purchase only from that dealer. Only three dealers were allowed for each union.

The procedure for registering as a dealer was as follows : (i) obtain a certification of residency in the union from the chairman of the Union Council; (ii) deliver the certificate and file an application with the BADC thana fertilizer inspector *; (iii) file the application with the thana agricultural development committee for approval;

* The duties of this inspector include inspecting the financial records, storage facilities and operations of the dealers and attempting bring them up to certain specified standards.

(iv) obtain clearance from the local (thana) police station and;
(v) secure final approval from the BADC sub-divisional manager.

This process was time consuming, often taking two to three months, and applications were often turned down because of the limit of three dealers per union. During the course of the discussion of the pilot, and in light of the availability of fertilizer, BADC dropped all restrictions on farmer purchases. All farmers were now permitted to purchase fertilizer from any dealer anywhere. Therefore, this aspect of the pilot was one BADC agreed with and instituted nationwide before the pilot even began.

E. Most Convenient Godown

During the course of field visits, a basic inefficiency was discovered in the system of purchases at thana godowns. In many cases it was discovered that a union was closer to a godown in an adjacent thana than to the godown in its own thana. Therefore, both BADC and AID staff suggested that dealers be permitted to purchase fertilizer from the most convenient godown. At certain places the most convenient godown may be different at different times of the year because rain or flood conditions change the most convenient travel routes during the year.

F. Hat Sales

Truly open competition exists among dealers in "hats" (village markets or bazars) where frequently several dealers, if not also middlemen, competitively sell fertilizer. BADC in December 1976 recognized the importance and frequent occurrence of hat sales and agreed that instructions would be issued to: (1) regularize what has been an ad hoc practice; (2) appoint dealers to sell in hats where the practice was not presently occurring.

Hat markets are particularly advantageous to small farmers and medium size farmers who traditionally visit a hat periodically. On such visits farmers try to sell something they have produced. When fertilizer is required, farmers like to "turn" some of the cash received into fertilizer so that the money is not all spent on other needs. Small farmers like to buy fertilizer in the hats for

several other reasons. One is that they can readily buy in any quantity that they choose. A second reason is that they have a choice to buy from any of a number of dealers and thus have confidence that they are getting the best buy possible - more so perhaps than when buying strictly from a dealer's shop. From the hat market, farmers take fertilizer home along with any other purchase and thereby save on transportation costs.

From Table I, it can be seen that hat sales of fertilizer were a common occurrence in the pilot thanas; 21 thanas recorded hat sales, six did not and for the others no data is available on hat sales.

G. Number of Dealers

As is mentioned in D above, the number of dealers was restricted to three per union when the pilot began and this restriction was a part of the national fertilizer allocation system created to deal with shortage conditions. One of the types of information the pilot was designed to collect was information on numbers and types of dealers. It was thus that in the early months of the pilot an important imbalance in the system was discovered. It was found that the dealer application process as described in D above coupled with the restriction on the number of dealers was inhibiting applicants from entering the business, and that this situation was in a number of cases preventing effective competition. Therefore, the recommendation was made that the number of dealers allowed per union be increased or even unrestricted and that the application process be simplified at the same time.

During the course of the pilot, action on the first of these points was taken nationwide. The number of dealers allowed per union was increased from three to six; and then from six to nine. Just recently, it has been increased again from nine to 15 nationwide. This had the practical effect of achieving an "unlimited" number of dealerships because in most unions the number of persons wanting to be dealers appears at the moment rarely to exceed 15 per union. The results of this action were seen in the pilot thanas and are believed to have been similar throughout Bangladesh. For thanas for which data was collected, it was observed that the number of dealers increased in 20 out of 22 thanas. This increase in the number of dealers undoubtedly increased competition in many areas.

H. Nature of Dealers*

There are approximately 18,000 active retail dealers each with average annual sales of approximately 25 MT. Information on the nature of dealers was also collected during the course of the pilot. Most dealers were found to be general merchandizers selling a wide variety of other items, and only selling fertilizer as a minor side business. Further, storage facilities were usually inadequate and purchases were most typically small, often just two to five maunds at a time. In most cases credit was not available to the dealers, and the profit of the average dealer was often marginal, in the range of $30 to $60 per year. This was found hardly sufficient to motivate the dealer to a vigorous marketing effort. At the same time, it was observed that the dealers as a body represent a most effective extension force for promoting the use of fertilizer if they were provided adequate incentives.

I. Size of Bags

In the godowns, fertilizer, especially TSP, was observed to be difficult to store for long because the 50 kg bags (during the handling and movement process and due to the use of hooks or other stresses) were often torn or otherwise leaked fertilizer. Thus, fertilizer got outside of the plastic liner and onto the jute outer bag. When combined with the high humidity of the Bangladesh monsoon even a small amount of TSP was found to be very corrosive to the bags, floors, steel structures, etc. In a number of cases TSP stored under such conditions required complete rebagging within less than three months, at which point further losses occurred during the inefficient bagging process.

The most typical result, however, was an intermediate situation where the dealer was forced to accept a damaged and corroded bag and to absorb the fertilizer loss from his own funds.

As a parallel to this situation it was observed during the pilot that while the dealers were forced in all cases to purchase whole bags of fertilizer, the farmers seldom did. They usually purchased less than 50 kg and often less than 25 kg. This observation of the pilot tended to reinforce the already existing preference of BADC for 25 kg bags.

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* Source: Fertilizer Marketing and Distribution Study - Interim Report and pilot project field surveys.

Presently, local production is in 25 kg bags as a matter of preference, but all import has been in 50 kg bags.

III. Features to be Incorporated in the Project

As was noted above, many of the different pilot and pilot related findings were adopted by BADC before the pilot ended. Adequate reserve stocks occurred naturally as a result of the general availability of fertilizer and BADC was able to keep it available at all thana locations. Unrestricted purchases by farmers from any dealer anywhere were adopted nationwide. Hat sales were encouraged nationwide. And finally the number of dealers allowed was increased from three to 15 per union nationwide.

Upon completion of the pilot in early April 1977 a series of meetings was held with BADC to review the pilot results, and to decide on additional demonstrated features to be introduced into the countrywide fertilizer distribution program.

In this context, consensus was reached on items a - e below as the conclusive features evolving from the pilot. Items f - j below were also part of the consensus, but while they were arrived at based upon considerations related to the pilot, they were not a direct result of it.

a. The New Pricing System

It was decided to institute a new discounting system countrywide by replacing the existing four tier system with a new two tier system. This innovation will allow for increased competition between larger numbers of dealers because it reduces the number of distance categories into which dealers are segregated countrywide. Standard retail prices to farmers will prevail at Tk 60 per maund for urea, 48 for TSP and 40 for MP.

Two Tier Distance Commission System

Miles Distance	Commission	Dealers Pay BADC For Urea	TSP	MP
0 - 6	4	56	44	36
Over 6	6	54	42	34
Standard retail price		60	48	40

This compares to the old system as follows:

Four Tier Distance Commission System

Miles Distance	Commission	Dealers Pay BADC For Urea	TSP	MP
0 - 3	3.5	56.5	44.5	36.4
3 - 6	4.0	56.0	44.0	36.0
6 - 9	4.5	55.5	43.5	35.5
Over 9	5.0	55.0	43.0	35.0
Standard retail price		60.0	48.0	40.0

The reduction to a two tier system is designed to provide an additional incentive to dealers to deliver to the remote areas, a difficulty observed in the pilot. The retention of a maximum retail price is to ensure a reasonable price to the farmer. Without a price ceiling, BADC considers that the price would likely reach high levels, particularly in the more remote localities.

b. Optimizing Number of Dealers

During the pilot year the number of dealers authorized was increased from three to 15 for each union. BADC will now reassess the question of the optimum number of dealers per union, addressing such factors as adequate return, sufficient competition and area coverage. BADC will examine the dealer roster on a periodic basis (probably yearly) and revoke the dealerships of those who have not satisfied certain sales criteria (volume). Further, BADC will continue to take steps to remove such remaining hindrances as prior police certification for dealer appointments. The basic points to be addressed are the reconciliation of the need for an efficient dealer system and the desirability of as open entry as possible for those who want to become dealers. Farmers will continue to be permitted to buy from any dealer, anywhere.

c. Most Convenient Godown

BADC will change its procedures so that dealers may choose the godown from which they purchase their fertilizer. Under this provision, a dealer may select a godown in an adjacent thana. He will, however, continue to be required to pick only one godown and purchase only there.

d. Direct Retail Sales from the Thana Godown

This provision of the pilot will be applied to the countrywide program and for the same purpose. It will be in place as a protective device to provide an alternate place for farmers to buy fertilizer at the BADC approved retail level should dealer prices go too high or there not be a satisfactory hat market in a given area. Thus, farmers will have several retail sources from which to buy -- the dealer shops, hat markets, and the thana godown. Farmers may buy from any union or thana source. The minimum purchase will be lowered from 50 kg to one bag even if the bag is only 25 kg, but except at times of shortage there will be no upper limit.

e. Hat Sales Promoted

Hat (village market or bazar) sales in the unions countrywide will continue to be encouraged and regularized through BADC directives as necessary. BADC district and thana personnel will monitor the hats and insure that fertilizer is available to farmers from this marketing source. A dealer may only sell at hats in his union and distance category but farmers can purchase from any hat anywhere.

f. Fertilizer in 25 kg Bags

BADC agreed that the AID imported fertilizer should be bid both for 25 kg and 50 kg bags. The advantages of the 25 kg bags in handling and reduction of fertilizer loss as discussed above may outweigh the additional costs of the 50 kg bags, but this needs to be evaluated on the basis of firm price offers.

g. Quantity Discounts Tested

BADC agreed that it will test quantity purchase discounts for dealers during this project. This will be funded by BADC,

possibly through revenues from fertilizer sales. It was decided that a study will be performed to determine the quantity (quantities) at which discounts will be effective and the amount of the discount(s). The discount will be tried in one or several districts and the results jointly evaluated by BADC and AID.

h. Dealer Training Program

During the course of the Agricultural Inputs III Project, BADC will conduct a fertilizer dealer training program with funding support from the AID grant. BADC has already started planning for this and rightly sees dealer training as a continuing program.

i. Financing Dealers

BADC plans to pursue with the agricultural and commercial banks a program of providing credit to fertilizer dealers.

j. Third Country Training

It was agreed that a program of observation training for BADC staff should be undertaken in nearby countries including India, Sri Lanka, and possibly Thailand and the Philippines. This training would include for example the observation of the private fertilizer marketing system in India and the bulk handling of fertilizer in Sri Lanka. From this experience, it is hoped that additional innovative ideas may be collected.

TABLE I

Summarization of the Pilot and Field Visits

Thana No.	District	Thana	Type of Pilot Thana	Border Thanas Dropped[2]	Field Visits by USAID Staff (dates)	Pilot Thanas in which Field Visits Evidenced:		
						Price Competition	Hat Sales	New Dealers
1.	Dacca	Srinagar[1]	Flexible Mark-up			ND[3]	ND	ND
2.	"	Monohardi	" "		1/76, 9/76	Yes	Yes	"
3.	"	Kaliganj	" "		3/76,9/76,2/77	"	"	"
4.	"	Savar[1]	Both		1/76,3/76,11/76	"	"	Yes
5.	Tangail	Basail[1]	Direct Sales		2/76	NA	"	"
6.	Chittagong	Sandwip	" "		3/76	NA	"	"
7.	Chittagong	Banshkhali	" "		3/76	"	"	"
8.	"	Chakaria	" "		2/76, 2/77	"	"	"
9.	Comilla	Faridganj[1]	" "		1/76, 8/76	"	"	"
10.	"	Matlab[1]	" "		3/76,1/77,2/77	"	"	"
11.	"	Nasirnagar[1]	" "		4/76, 1/77	"	ND	"
12.	Rajshahi	Porsha	Flexible Mark-up	Dropped	2/76	ND	ND	ND
13.	Bogra	Dhunat	" "		2,3,5/76; 2/77	Yes	Yes	Yes
14.	"	Shariakandi	" "		2,3,5,11/76	"	"	"

PHASE I THANAS

ANNEX B.10
Attachment

TABLE I (continued)

Summarization of the Pilot and Field Visits

	Thana No.	District	Thana	Type of Pilot Thana	Border Thanas Dropped 2/	Field Visits by USAID Staff (dates)	Pilot Thanas in which Field Visit Evidenced: Price Competition	Hat Sales	New Dealers
PHASE I THANAS	15.	Bogra	Khetal	Flexible Mark-up		2/76, 5/76, 8/76	Yes	Yes	Yes
	16.	Rangpur	Gangachara	" "		2/76, 8/76, 2/77	"	"	"
	17.	"	Bhurungamari	" "	Dropped	4/76	ND	ND	ND
	18.	"	Nageswari	" "	Dropped	4/76	ND	ND	ND
	19.	Jessore	Lohagara	Direct Sales		4/76	N/A	ND	ND
	20.	"	Kaliganj	" "		2/76, 4/76, 9/76	"	ND	ND
	21.	"	Keshabpur	" "		2/76	"	ND	ND
PHASE II THANAS	22.	Mymensingh	Fulpur	Both		5/76, 12/76, 3/77	Yes	Yes	Yes
	23.	"	Sherpur	"		5, 10, 12/76, 3/77	"	"	"
	24.	"	Barhatta 1/	"		7/76, 12/76	"	No	No
	25.	"	Kuliarchar 1/	"		7/76, 11/76	"	Yes	No
	26.	Faridpur	Bhanga 1/	"		8, 12/76; 1, 3/77	"	No	Yes
	27.	Sylhet	Golapganj	"		6/76, 12/76	No	No	Yes
	28.	"	Moulvibazar	"		6/76, 12/76	Yes	Yes	Yes

ANNEX B.10
Attachment

TABLE I (Continued)
Summarization of the Pilot and Field Visits

	Thana No.	District	Thana	Type of Pilot Thana	Border Thanas Dropped 2/	Field Visits by USAID Staff (dates)	Pilot Thanas in which field Visit Evidenced		
							Price Competition	Hat Sales	New Dealers
PHASE II THANAS	29.	Noakhali	Feni	Both Flexible and Direct	Dropped	7/76, 8/76, 12/76	No	No	ND
	30.	"	Sudharam	"		7/76, 8/76, 12/76	Yes	ND	ND
	31.	Dinajpur	Fulbari	"	Dropped	6/76, 1/77	Yes	Yes	Yes
	32.	"	Pirganj	"	Dropped	6/76, 1/77	Yes	Yes	Yes
	33.	Pabna	Ullapara	"		6/76, 11/76	Yes	Yes	Yes
	34.	"	Atgharia	"		6/76, 10/76	Yes	Yes	ND
	35.	Rajshahi	Natore	"		6/76, 10/76, 3/77	No	No	ND
	36.	Kushtia	Kushtia	"	Dropped	6/76, 8/76, 3/77	No	No	ND
	37.	Khulna	Satkhira	"	Dropped	6/76, 9/76	No	ND	ND
	38.	Khulna	Fakirhat	"		6/76	No	ND	ND
	39.	Barisal	Mathbaria 1/	"		8/76, 1/77	No	ND	ND
	40.	Barisal	Lalmohan	"		8/76, 3/77	Yes	ND	ND

1/ These are the 10 thanas that on January 17, 1977 were notified by a BADC directive that they could have unlimited numbers of dealers.

2/ These thanas were nominally dropped from the pilot because their thanas sales data were found to be distorted by border smuggling especially the data for July-December 1975 - the pre-pilot base period used to compare with sales for the same period a year later during the pilot. But BADC continued to operate them as pilot thanas until January 1977.

3/ ND = Not determined by field visits

ANNEX B. 1
Attachment

ANNEX B.10
Attachment

TABLE II

Comparison of Sales Before Flexible Markup with Sales During Flexible Mark-up

	District	Thana	Without Flexible Markup - Sales in MT (7/1/75-12/31/75)	With Flexible Markup - Sales in MT (7/1/76-12/31/76)	Percent Change in Sales for each Thana	Percent Change in Sales for the District
1.	Dacca	Srinagar	768	686	(-)11	(+)21
2.	"	Monohardi	588	668	(+)14	
3.	"	Kaliganj	807	352	(-)56	
4.	"	Savar	2070	2057	(-) 1	
5.	Rajshahi	Porsha*	607	575	(-) 5	(+)38
6.	"	Natore	345	233	(-)33	
7.	Bogra	Dhunat	627	1389	(+)122	(+)38
8.	"	Shariakandi	950	957	(+) 1	
9.	"	Khetlal	1332	2341	(+)56	
10.	Rangpur	Gangachara	684	1340	(+)96	(+)25
11.	"	Bhurungamari*	41	66	(+)40	
12.	"	Nageswari*	141	109	(-)23	
13.	Mymensingh	Fulpur	638	437	(-)32	(-)3
14.	"	Sherpur	511	862	(+)69	
15.	"	Barhatta	265	116	(-)56	
16.	"	Kuliarchar	860	815	(-)5	
17.	Faridpur	Bhanga	139	152	(+)10	(+)174
18.	Sylhet	Golapganj	131	118	(-)10	(-)5
19.	"	Moulvi Bazar	159	154	(-)3	
20.	Noakhali	Feni*	2203	1647	(-)25	(+)8
21.	"	Sudharam	849	647	(-)24	

ANNEX B.10
Attachment

TABLE II (Continued)

	District	Thana	Without Flexible Markup - Sales in MT (7/1/75-12/31/75)	With Flexible Markup - Sales in MT (7/1/76-12/31/76)	Percent Change in Sales for each Thana	Percent Change in Sales for the District
22.	Dinajpur	Fulbari*	821	1264	(+)54	(+)2
23.	"	Pirganj*	593	543	(-)8	
24.	Pabna	Ullapara	2796	2777	(-)1	(+)8
25.	"	Atgharia	265	256	(-)3	
26.	Kushtia	Kushtia*	1380	298	(-)78	(+)33
27.	Khulna	Satkhira*	769	758	(-)2	(+)24
28.	"	Fakirhat	144	134	(-)8	
29.	Barisal	Mathbaria	263	78	(-)70	(-)42
30.	"	Lalmohan	635	680	(+)1	
	Total		22,381	22,509	(-)1	
	All of Bangladesh		209,695	237,948	(+)13	
	*Border Thanas		6,555	5,260	(-)20	
	Other Thanas		15,826	17,249	(+)9	

ANNEX B.10 Attachment

TABLE III

SALES PERFORMANCE COMPARISON

(FLEXIBLE MARK-UP PILOT THANAS vs THEIR DISTRICTS)

(For 22 Non-Border Thanas)

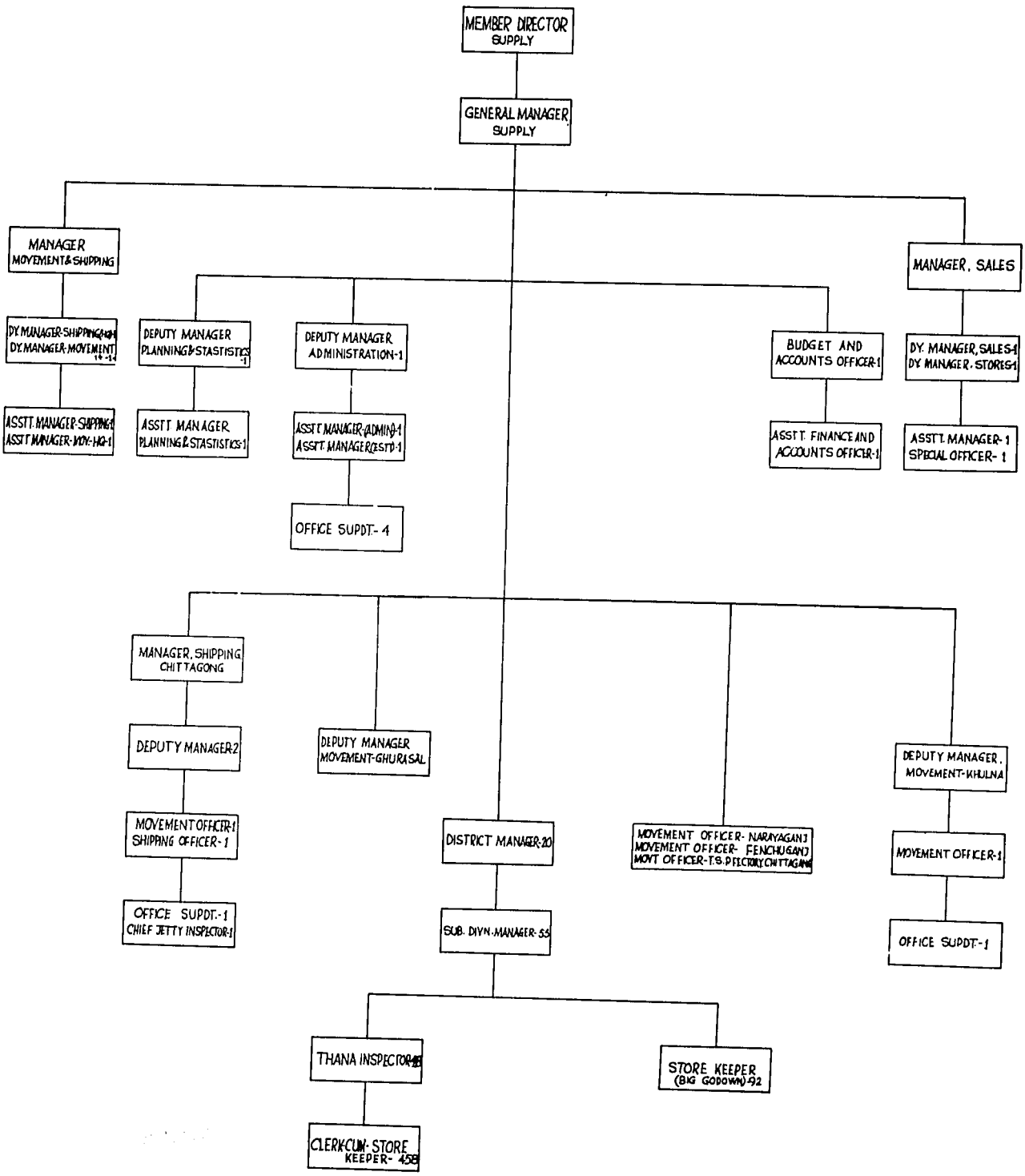
DISTRICTS INCORPORATING PILOT THANAS					PILOT THANAS		
DISTRICTS	7/1 - 12/31 Sales 1/ 1975 000's tons	7/1 - 12/31 Sales 1/ 1976 000's tons	% Change in Sales (+) or (-)	% Change in Sales (+) or (-)	7/1 - 12/31 Sales 1/ 1975 000's tons	7/1 - 12/31 Sales 1/ 1976 000's tons	THANAS
Dacca	26.34	31.81	(+) 21	(-) 11	4,230	3,765	Srinagar Monohardi Kaliganj
Bogra	13.50	18.68	(+) 38	(+) 61	2,910	4,690	Savar Dhunat Shariakandi
Rangpur	12.84	16.09	(+) 25	(+) 96	685	1,340	Khetal Ganjachara
Mymensingh	13.71	13.30	(-) 3	(-) 2	2,270	2,230	Fulpur Sherpur Barhatta
Faridpur	.74	2.03	(+)174	(+) 10	140	152	Kuliachar Bahanga
Sylhet	6.12	5.85	(-) 5	(-) 7	290	270	Golapganj
Noakhali	10.41	11.28	(+) 8	(-) 24	850	650	Moulvi Bazar Sudharam
Pabna	10.16	10.92	(+) 8	(-) 1	3,060	3,035	Ullapara Atgharia
Rajshahi	9.98	13.81	(+) 38	(-) 33	346	233	Natore
Khulna	3.06	3.78	(+) 24	(-) 7	144	134	Fakirhat
Barisal	6.21	3.60	(-) 42	(-) 22	898	750	Mathbaria Lalmohan
Total	113.07	131.15	(+) 16	(+) 9	15,826	17,249	

1/ From linear regression analysis it was determined that to override seasonal fluctuations from year to year a 6 month or longer sales period was necessary when comparing a period's sales with the same period of another year. The period of July-December was chosen for the following reasons:

1. Starting with July sales data, allows 1 month for adjustment of new phase II thanas + for phase I flexible mark-up thanas to adjust to the new purchase prices for dealers;
2. Sales figures beyond Dec. 31, 1976 in some cases were unavailable.

ANNEX B. 11

ORGANISATION CHART FOR FERTILIZER PROGRAM OF B A D C



Historical Costs and Revenue of the Fertilizer Distribution Scheme
(Tk. 000s)

	1962/63	1963/64	1964/65	1965/66	1966/67	1967/68	1968/69
Costs							
Purchase of fertilizer	51,520	31,120	48,079	87,023	102.234	109,102	130,232
Opening stock-closing stock	(21,921)	21,472	1,213	(24,568)	(23,847)	(3,346)	(14,147)
Total cost of sales	29,599	52,592	49,292	62,455	78,387	105,756	116,085
Transport, freight, handling, etc.	4,274	4,702	10,068	9,725	12,272	14,262	28,505
Rent of godowns	140	149	485	477	690	904	1,903
Depreciation of godowns	-	-	-	-	101	165	509
Pay & allowances	129	161	694	1,192	2,070	2,654	3,678
Contribution to overheads	-	-	1,462	2,767	2,583	3,611	4,163
Other costs	117	870	1,144	1,393	2,336	1,775	17,094
Total costs	34,259	58,474	63,145	77,009	98,439	129,127	171,937
Revenue							
Sales (net of discount)	20,064	28,375	24,689	37,973	47,465	63,503	58,931
Other revenue (including P&L adjustments)	-	-	38	2	1,187	2,309	65
Subsidy	17,599	31,743	33,043	39,855	59,960	79,264	94,747
Total revenue	37,663	60,118	57,770	77,830	108,612	145,076	153,743
Net Profit (loss)	3,404	1,644	(5,375)	821	10,173	15,949	(18,194)

(Contd....page 2)

Costs	1969/70	1970/71	1971/72*	1972/73*	1973/74*	1974/75*	1975/75*
Purchase of fertilizer	126,981	123,036	50,459	108,004	209,967	331,214	935,769
Opening stock-closing stock	8,954	11,742	49,500	(8,500)	14,500	37,500	(254,000)
Total cost of sales	135,935	134,778	99,959	99,504	195,467	368,714	681,769
Transport, freight, handling, etc.	17,759	30,253	19,719	33,055	43,608	72,039	120,241
Rent of godowns	1,739	2,276	1,890	1,540	802	1,936	3,333
Depreciation of godowns	598	782	830	790	770	730	700
Pay & allowances	4,705	4,657	66,358	7,282	7,193	11,875	12,312
Contribution to overheads	4,606	6,564	4,238	5,095	6,458	11,481	22,066
Other costs	4,230	5,424	24,631	109,047	23,028	22,547	47,175
Total costs	169,572	184,734	157,625	256,313	227,326	489,322	882,596
Revenue							
Sales (net of discount)	71,568	72,832	50,985	97,842	199,050	339,140	397,202
Other revenue (including P&L adjustments)	17,700	1	-	-	-	-	-
Subsidy	100,000	126,012	65,412	160,000	74,400	205,000	
Total revenue	189,268	198,845	116,397	257,842	273,450	544,140	917,202
Net profit (loss)	19,696	14,111	(41,228)	1,529	(3,876)	54,818	34,606

* No accounts have been published by BADC since 1970/71. Data for the following years have been calculated and estimated by the Consultants from information provided by, and in consultation with, BADC.

Source: Interim Report of the Ashuganj Study; taken from BADC Annual Accounts and Consultants' estimates.

The Ashuganj Study

Terms of Reference

Objective

1. To develop phased proposals for improving the fertilizer marketing and distribution system (complete with all its personnel and material components) so that, taking into account costs and benefits, foreign exchange scarcity and administrative constraints, the resulting system should be the best achievable for the period 1976 through 1986. Investment proposals and, to the extent applicable, proposals for reorganization should be so phased as to be able to distribute and market the country's fertilizer requirements by the end of 1978, when the Ashuganj Fertilizer Plant is expected to commence commercial operations. 1/

2. The study must:

Phase I.

(a) Carry out economic and financial analysis of alternative distribution systems and provide sufficient information on the optimal distribution system, including in particular transport modes, bulk vs bag shipment, size and material of bags, etc. so as to enable the Ashuganj Fertilizer and Chemical Company to take decisions on the design of the storage, bagging and dispatch facilities of the Ashuganj Fertilizer Plant; and

(b) On the basis of projections of demand for fertilizer estimate the seasonal storage requirements for the major transshipping and Thana wholesale locations up to 1985/86.

Phase II.

(c) Complete the feasibility study of proposed investments to improve the fertilizer marketing and distribution system, including, where deemed more efficient, multipurpose facilities for storage or transport of grain, pesticides, seeds, etc. as well as for fertilizer. The feasibility study would include cost estimates and economic and financial analysis in sufficient detail to enable a proposed project to be appraised for financing by a bilateral or international agency.

1/ USAID note: Plant commercial operation date now probably mid-1980.

SOURCE: BADC, June 1976

3. The draft final report for Phase I is to be completed within four months of inception and the final report within one month of receipt of written comments from the Government. The draft final report for Phase II is to be completed within three months of inception and the final report within one month of receipt of comments from the Government.

II. Specific Tasks Under Phase I

1. Making use of existing fertilizer consumption projections updated to take account of more recent experience and specific development plans that are likely to have an impact on fertilizer use, such as irrigation projects and the rainfed rice improvement project, establish Thana-wise seasonal and annual consumption projections for 1976/77 to 1985/86 and an indicative forecast for a further approximately 10-year period.

2. Factors affecting procurement of all imported fertilizers and fertilizer raw materials (rock phosphate, sulphuric acid) must be assessed. These include, but are not confined to, the likely world market situation of the materials concerned, Bangladesh's foreign exchange situation and priorities thereof, domestic production forecasts, and information, inter alia, from all branches of the Government of Bangladesh, the Bangladesh Aid Group, bilateral aid-giving agencies and the IBRD.

3. Based on the foregoing, a judgment must be made on the quantity of maximum pipeline storage requirements year by year, for the ten-year period under review.

4. Arising out of domestic production projections and the likely demand for the domestically procured fertilizer, exportable surpluses and import requirements must be determined year by year, and methods for their movement developed, in conjunction with other fertilizer transport and storage needs.

5. Assuming that farmers' points of purchase (the retailers' outlet) will be supplied from Thana stores and that these points will be required to carry adequate, pre-determined inventories, a model for developing seasonal and monthly fertilizer movements must be constructed. It is to commence at the point at which the fertilizers become the property of the marketing and distribution organization and end in the Thana stores.

6. Taking into account information to be provided under Paragraph 4.9 of this Agreement and listed in Appendix-D, the location, capacity

and design of the required components of the storage pipeline must be determined. These will include:

a. storage at plant site;
b. storage of finished products at port of entry;
c. the intermediate warehouses;
d. the Thana warehouses;
e. a year-by-year phasing of their construction for the ten-year period under review;
f. the feasibility of integrating grain and fertilizer storage and criteria thereof.

7. Taking into consideration conditions prevailing in Bangladesh, specific recommendations must be made on:

a. what proportion, if any, of indigencus production should be delivered in bulk to satellite bagging plants located in intermediate stores;
b. equipment for bulk handling and satellite bagging plants;
c. methods of containerization to be employed for bulk transport;
d. the likely cost, including foreign exchange component, of the equipment and construction of bulk handling and satellite bagging facilities and the phasing of their installation.

8. Taking into consideration the conclusions of 5, 6 and 7 above, transport capabilities must be surveyed and recommendations for their strengthening made, with the prime objective of developing least-cost systems. These must include, but not be confined to specifying:

a. expected quantities handled by road, rail and water transport, in ton-miles;
b. suitable covered rail wagons on both rail systems;
c. specific locomotive needs;
d. meter-gauge train ferries across the Brahmaputra;
e. whether to employ unit trains and the kind to be used;
f. coaster, tugboat, and barge requirements and specifications;
g. port facilities, inland and salt water;
h. trucks;
i. local short-distance haulage needs from railhead or river port to warehouse;
j. the handling facilities required at each point of transfer;
k. the phasing-in of additional facilities;
l. costs, including foreign exchange component, of each of the groups.

In the foregoing, extensive use shall be made of recent Economist Intelligence Unit (EIU) studies and findings.

9. Examine the present pricing structure and on-costs and recommend a fair and equitable price buildup based on costs and reasonable profit margins commensurate with services rendered.

10. Taking due notice of existing private and public transport organizations, make specific recommendations as to what part, if any, of the additional transport equipment should be owned by the fertilizer marketing and distribution organization.

11. Determine the most suitable package size, balancing end-user convenience against costs.

12. Arising out of 11, packaging methods and materials must be evaluated, approximate specifications as to dimensions and strengths given, bag testing methods established and stacking patterns developed to ensure proper inventory and movement control on a "first-in-first-out" basis. The costs and economic benefits of changing existing bagging materials must be analyzed and specific recommendations made to enable, inter alia, the drawing up of specifications of the bagging lines of the Ashuganj plant and the desirability, under the conditions of Bangladesh, to have a completely weatherproof package.

13. Determine whether BADC will be capable of carrying the fertilizer marketing and distribution business along with its other growing activities and make specific recommendations as to whether, and when (in terms of time or volume of business) a separate fertilizer marketing and distribution corporation might have to be set up. Determine at what point along the distribution pipeline it should hand over to other organizations such as private, cooperative, or public sector wholesalers and/or retailers.

14. In view of the geographic spread of the fertilizer (and, possibly, pesticides, seeds, etc.) business, prepare an organization chart for the marketing and distribution organization. This should include, but not be confined to:

a. the sales organization, comprising of personnel in contact with the dealers;
b. the distribution organization, comprising movement, bagging, warehouse management, and contact with the railways, water transport, truckers, and local hauliers;
c. product line personnel for items that may be distributed along with fertilizer (see Phase II);
d. a market research and market intelligence organization that will develop annual and five-yearly consumption forecasts on a Thana, product, and seasonal basis every year. This forecast must be available to enable ordering the next year's import need in good time and to give a positive basis for longer-range supply contracts;

e. as part of d. above, specify the time of the year when such forecasts are to be submitted in a country-wide consolidated form;

f. a market development organization which must include dealer training and may include market development, advertising and sales promotion activities directly operated by the fertilizer marketing and distribution organization;

g. develop the necessary supervisory superstructure including the criteria and location of regional subdivisions and the headquarters organization. Establish a realistic salary formula for all cadres, with due regard to equivalent Government and private enterprise compensation structures that will enable the build-up of motivated, high quality staff.

15. Calculate the costs of such an organization under the overall management system that will evolve from 12 above and make specific recommendations as to the necessary dealer, wholesaler, distributor and importing organization's mark-ups. In this context, evaluate and make specific recommendations on whether any part of the distribution chain should work on a commission agency basis (pay after sale) or whether ownership of fertilizer and final responsibility of disposal should devolve on the extraneous wholesaler and/or retailer. Similar recommendations are required for other products marketed with fertilizers.

16. Estimate extent and duration of credit needs of the distribution chain, on the assumption that the end-user pays cash for this purchase (whether from his own resources or borrowed is not part of this study).

17. Determine whether there are any specific technical assistance and/or domestic and external training needs for developing the fertilizer marketing and distribution program; and quantify and cost them.

III. Specific Tasks Under Phase II

1. Examine whether and how the distribution of seeds, pesticides, sprayers and other purchased inputs should be integrated with that of fertilizer distribution and in what way such integration affects distribution management and the multiple use of storage and handling facilities. Also, examine, in coordination with consultants involved in the foodgrain storage study, any possible saving through joint use of storage, transportation or distribution facilities.

2. For all assets to be acquired or rehabilitated for the fertilizer marketing and distribution system, including to the extent found justified transportation investments and satellite bagging facilities, and to the extent found desirable facilities for the combined storage and/or distribution of grain, pesticides, seeds, etc. as well as fertilizer, determine:

a. Capacity, location (including a map) and suggested five-year phased program for rehabilitation of existing storage facilities and/or construction and acquisition of new facilities;
b. Investment cost, broken down into local and foreign exchange components;
c. Proposed organizational arrangements for project implementation and for management of facilities once acquired;
d. Estimated seasonal patterns of utilization of facilities;
e. Estimated annual operating costs and recommended charges for the use of facilities and resulting projected cash flows;
f. Benefit analysis, including both the financial and economic rates of return.

In examining possible multipurpose storage facilities for foodgrains and pesticides as well as fertilizer, use should be made of results of the foodgrain study 2/ and pesticides study 3/to be undertaken by USAID-financed consultants. The feasibility study for the proposed investments should be in sufficient detail to enable a proposed project to be appraised for financing by a bilateral or multilateral aid agency.

Expected Report Outline

Summary and Conclusions - Phase I

A. Past Performance

1. fertilizer marketing and distribution since 1963/64; evaluation of achievements; shortcomings;
2. analyse and evaluate the present cost structure methods of payment and margins;
3. prepare fertilizer production and consumption projections for the next 10 years, by nutrients; review available data, evaluate and develop the product-wise figures on which the marketing and distribution plan is to be based (a desk study).

B. Project Planning Parameters

1. Review of fertilizer supply situation from:

   i. indigenous sources;
   ii. imports;
   iii. expected control over import phasing of raw materials and finished products.

2/ USAID note: Reference unclear. Possibly refers to Kansas State University team scheduled for July 1976
3/ USAID note: Pesticides study completed March 1976.

2. Time perspective of proposed project, reasons.

C. The Project

1. Need for the project.
2. Project components.

a. Sales to end-users

i. location and numbers (within each Thana) of final sellers;
ii. minimum deliveries to dealers, their method of payment, handling charges;
iii. permitted dealer margins; enforcement.

b. Supplying dealers

i. by wholesalers/distributors;
ii. by BADC direct;
iii. TCCA and/or other wholesaler involvement;
iv. proposed flow chart from factory/port to the sales point;
v. seasonal storage facilities required, their location and size;
vi. costs of operation.

c. Product preparation

i. bag sizes, bagging materials, reasons for recommendation (economic and operational), specifications, control thereof;
ii. points of bagging, facilities required, cost (local & FX);
iii. costs of operation.

d. Market development and market intelligence

i. details of market intelligence required, methods of consumption forecasts for one year; and for each of the following five years;
ii. marketing services, sales promotion, and market development required; identify scope and extent devolving on the marketing organization, with special reference to dealer training.

e. Integrating other input services marketing with fertilizers

i. identify and discuss product lines;
ii. additional physical facility requirements in distribution chain;
iii. procurement, packaging;
vi. incremental costs to organization; total marketing costs.

f. Related services and facilities

i. indigenous production phasing (routine plant shutdown timings, new plant construction schedules);
ii. import phasing and management;
iii. transportation needs:

(a) rail
(b) road
(c) water
(d) local
(e) delivery methods of dealers
(f) terminal handling facilities

iv. satellite bagging facilities (if found justified).

g. Organization and Management

i. evaluate BADC's capability to carry fertilizers;
ii. BADC and/or alternative organizations, their formations, timing of change over, if any;
iii. staffing patterns, organization charts, locations, office and transport equipment needs, job descriptions at each stage;
iv. recommendation for technical assistance and training.

Summary and Conclusions - Phase II

A. Past Performance and Current Situation

1. marketing and distribution of other production inputs;
2. pesticides and seeds: review of available data, consumption forecasts (a desk study);
3. same for any other product arising out of a. above;
4. existing unitary and multipurpose storage facilities owned and rented by public agencies for fertilizer and for any other commodity for which multipurpose storage facilities are recommended;
5. performance of the system, its volume of commodities handled and stored, seasonal movement, location;
6. major problems experienced with the existing system.

B. Project Planning Parameters

1. projections on a seasonal and Thana basis of the volume of fertilizer to be handled and stored and the volume of any other commodity recommended to be stored in multipurpose facilities with fertilizers;
2. comparison of the above projections with the quantity and quality for existing facilities;
3. criteria for determining the location, capacity and design for transportation, storage or satellite bagging facilities or equipment proposed to be built, procured or rehabilitated;
4. justify the need for the project.

C. The Project

Describe the overall project and its major components, its total investment cost, and the criteria used in determining project design as against possible alternatives including

1. capacity, location (including a map) and a suggested five-year phased program for construction or rehabilitation and/or acquiring of storage facilities;
2. investment cost, broken down into local and foreign exchange components;
3. proposed organizational arrangements for project implementation and for management of facilities once acquired;
4. estimated seasonal patterns of utilization of facilities;
5. estimated annual operating costs and recommended charges for the use of facilities and resulting projected each flows;
6. benefit analysis, including both the financial and economic rates of return.

Appendix

To contain all cost and facilities tables, in phasing-in table or diagram form and summary cost tables showing local and foreign exchange costs and phasing. Recurrent costs, year by year are to be shown.

NATIONAL WORKSHOP ON PROBLEMS OF FERTILIZER MARKETING AND DISTRIBUTION AT SMALL FARMERS' LEVEL

March 8 - 10, 1977

BADC Staff Training Institute

Madhupur

RECOMMENDATIONS

(Draft text)

I. Recommendations on Fertilizer Pricing Policy for Increased Fertilizer Use By Small Farmers

Incentive Pricing

1. Fertilizer prices fixed by the Government must be linked with the price of paddy and the ratio of two prices should be maintained at a level which provides necessary incentives for "small" farmers to use fertilizers.

2. Before planting season of each cereal crop, a Committee of experts, drawn from relevant agencies, (i.e. Ministries of Agriculture, Food and Planning) should undertake a detailed exercise and recommend prices to be fixed for fertilizers as well as the support price of food grains.

3. It is generally recognized that farmers using fertilizers for the first time will expect an incremental yield the value of which will be approximately three times the cost of fertilizers i.e., a value-cost ratio of 3. With experience in fertilizer use and confidence about benefits from fertilizers, farmers will accept a value-cost ratio of 2 or even 1.5.

4. Effective measures should be taken by the agency responsible for extending market support to cereal crops, to ensure that the support price fixed by the Government is actually received by the growers, particularly the small farmers who tend to dispose of their produce immediately after the harvest.

Incentives for fertilizer dealers

5. Fertilizer business should be made more competitive and profitable to attract sufficient number of traders, who are at the same time efficient, both at the wholesale and retail levels.

6. More liberal credit facilities through the commercial banks as well as the Krishi Bank should be made available to the fertilizer dealers so as to reduce their operation costs and encourage them to expand their volume of business as well as to mount sales promotion efforts. The banks like the BKB may also be requested to conduct a survey to assess the special credit needs of the fertilizer dealers.

7. BADC should formulate and implement a plan for allowing incentive bonus to fertilizer dealers who excel in their sales performance.

II. Recommendations On Institutional Arrangements For Linking Credit and Marketing

8. To make fertilizers easily available to small farmers, all the agencies including the co-operatives, the Krishi Bank and the commercial banks should specifically identify and designate their programme clientele. Credit facilities should be tailored for this special clientele, comprising of the "small farmers", who have traditionally been bypassed.

Credit for co-operative societies

9. Credit should be extended on the basis of production plans prepared and jointly approved by farmers' group, wherever feasible with assistance from the extension agents and suppliers of inputs.

10. Credit to co-operatives should preferably be in kind and credit delivery advice against fertilizer supply should be issued to the co-operatives, for taking delivery of fertilizers from the nearest dealer shop.

Credit for farmers outside co-operatives

11. Banks, including the BKB, should extend credit to "small farmers" who are not members of co-operatives on easy terms. Loaning procedures should be simplified and payments made promptly.

12. Such credit should also be based on production plans, which may be prepared with the helping of the agricultural extension agents, input suppliers and credit institutions. Group actions and collective planning efforts should be encouraged by the banks and directly aided by them.

13. To minimise small farmers risks, fertilizer loans should preferably be linked with supply of other complementary inputs like HYV seeds, irrigation, plant protection, labour etc.

Loan repayment

14. Loan repayment procedures should be further simplified, particularly to avoid harassment of small farmers, who are keen to repay but are frightened by the formalities of credit institutions.

15. Farmers should be allowed to repay their loans either in cash or in kind (standard commodities), whichever is convenient for them. Date and place of repayment should be fixed in order to suit the convenience of the farmers.

16. Credit institutions should consider arrangements for repayment in kind at an early date and may collaborate with the co-operatives. Possibility for linking up repayment facilities with the grain procurement programme or the Ministry of Food may also be explored immediately.

Fertilizer marketing

17. Where TCCAs function as wholesale fertilizer dealers, recommendations of the Project Officer, Secretary, Deputy Director of Agriculture, ADE and the BADC representative should be considered in appointment and cancellation of retail dealership.

Problems of sharecroppers

18. The Bangladesh Academies for Rural Development, the Bangladesh Institute of Development Studies and other institutions involved in socio-economic research should initiate studies and research on different aspects of land tenure systems and their co-relation with input use, a subject matter which had received scant attention in the past. Objective of these studies should be to consider such reforms as may be necessary for raising farm productivity.

III. Recommendations On Improving Physical Distribution Of Fertilizers (Storage, Stock Control, Transportation etc)

Storage & transport

19. To ensure timely supplies on a larger scale additional fertilizer storage capacity of 2,25,000 tons should be set up by the BADC in the short run.

20. In planning construction of new storage units, BADC should emphasize establishment of godowns at points as close to the farmers as possible, particularly in areas where communications are difficult.

21. In order to maintain a smooth flow in movement of fertilizers, specially in the peak season, priority should be given by the Government for provision of additional transportation facilities by increasing the number of trucks, barges etc which are now available for movement of fertilizers.

Improving efficiency in stock-control & management

22. While TCCAs are operating as wholesale dealers in some thanas, in some others both TCCA and BADC are handling wholesale distribution side by side. The necessity of providing incentives to co-operatives was recognised; at the same time it was felt that benefits from the different wholesale management systems should be closely monitored and carefully evaluated. The objective should be to set up wholesale dealership which maximises benefits for small farmers. Such a study may be jointly sponsored by the BADC & the IRDP.

23. There should not be any restriction on the number of retail dealers.

24. BADC should carefully examine the rates and system for payment of commission, so that lifting of fertilizer stocks by dealers, specially by those who operate in the distant areas, is not impeded.

25. Since small farmers tend to purchase fertilizers little at a time, arrangements for small packings i.e. 20 & 40 seers, should be introduced by the domestic fertilizer plants.

Granulation of TSP

26. Because farmers generally preferred granular TSP to its powdered form, the Chittagong Plant should consider feasibility of installing facilities for granulation of TSP.

Training needs

27. For improvement in fertilizer distribution management, stock control, warehousing & marketing, finance and accounting, there was an urgent need for provision of training facilities. Such training programmes should be fully integrated to cover management needs of agencies involved in fertilizer procurement, production and supplies.

28. BADC should also examine feasibility of organising special training facilities for fertilizer dealers, including the TCCAs, for better store management & sales promotion.

29. Relevant international agencies including the FAO, ESCAP and IFDC should assist such training efforts and also provide facilities for exchange of experience & expertise among the countries of this region.

IV. Recommendations On Promoting Fertilizer Use By Small Farmers

Improvement of Infrastructure

30. Since use of fertilizers is directly dependent on extension of irrigation coverage, the Agriculture Extension Directorate, the Co-operative Directorate, IRDP and BADC must take effective measures in order to increase the efficiency of water use and ensure better capacity utilisation of existing deep tubewells, shallow tubewells and low lift pumps.

31. A definite priority should be attached by the agencies concerned, including the research institutes of the country to introduce, develop and popularise low cost irrigation equipment which can be manufactured locally. This may include hand pumps, hand tubewells and semi mechanised equipments.

32. Institutional facilities should be set up and resources provided to local government institutions and specifically small farmers' organisations for planning and executing small scale labour intensive agricultural projects i.e. excavation of canals, ditches, tanks, ponds etc. Such projects on one hand will enhance the productive capacity of small farmers through extension of irrigation and on the other generate additional employment for the rural poor. At the same time small farmers by learning to plan for themselves will have inducements to organise themselves into viable groups.

33. Local institutions should be provided with resources and encouraged to plan and execute projects for flood control, drainage and irrigation, which will reduce risks in fertilizer use.

34. A priority programme has to be taken up for development of ground water resources, as alternative means of irrigation, to counter the adverse effects on fertilizer use in the region affected by Farakka Barrage.

Institutions and Extension Needs of Small Farmers

35. Small farmers, particularly the landless and the share-croppers are yet to come fully within the fold of co-operatives. Special programme should be developed by the IRDP and other concerned agencies so that they receive credit and other facilities which will enable them to use fertilizers and other inputs.

36. Intensive extension methodology, designed specifically for the small farmers, including farm level demonstration plots, mass media, communication, training, should be introduced by the Directorate of Agriculture Extension, the IRDP and the BADC.

37. Under their respective outreach programmes, BRRI, ARI, Soil Fertility Institute and other research agencies should set up experimental plots to monitor, feed back and evaluate results of fertilizer practices by small farmers. This would be relevant for areas where farmers have resorted to fertilizer uses which are different from recommended practices.

38. BADC on an experimental basis may make available necessary facilities to selected fertilizer dealers, model farmers, co-operatives, so that they may be used as fertilizer sales promotion and extension agents. BADC and the Directorate of Agriculture Extension may formulate a joint programme in this connection.

V. Follow Up Actions

39. Ministry of Agriculture should set up a Committee, consisting of representatives of concerned agencies and headed by a Joint Secretary, to follow up recommendations made for an Action Programme for Promotion of fertilizer use by the small farmers.

40. Ministry of Agriculture and the BADC should be involved in regular monitoring and evaluation of information on fertilizer use and demand trends, particularlyof the small farmers. Such information may be discussed and made available at future national workshops to concerned agencies, for planning and policy making.

Government Commitment to Reduce Subsidy

(Government Seal)

Mr. M. Syeduzzaman
Secretary

GOVERNMENT OF THE
PEOPLE'S REPUBLIC OF BANGLADESH
MINISTRY OF PLANNING
(PLANNING COMMISSION)
DACCA
February 12, 1975

Sub:- AID Loan No. 388-T-003 for
Ashuganj Fertilizer Project

Dear Mr. Toner,

During negotiations for this Loan, AID and several others of the financing partners expressed their concern that subsidies in Bangladesh on the prices of finished fertilizer should be eliminated.

In the discussions, the Government of Bangladesh reminded the financing partners that the Government had, since adoption of its first Five Year Plan (1973/74-1977-78) been committed to a policy of phased reduction of subsidies in fertilizer prices. The Government also reminded the financing partners that the Bangladesh delegation to the meeting of the Bangladesh Aid Group in Paris on October 24 and 25, 1974 had told participants that in view of the higher yields and prices of foodgrains, making production remunerative, the Government intends to continue its policy of reducing subsidies.

This letter will confirm that a progressive reduction of subsidies on agricultural inputs, including fertilizer, remains the policy of the Government of Bangladesh. Of course, our ability to pursue this policy as rapidly as possible will depend on movements in international prices which it is impossible to predict at this time.

In these circumstances, accepting the legitimate concern of the financing partners on this issue, the Government also agrees to review periodically with AID the Government's progress in implementing this policy.

Yours sincerely,

/sd/
(M. Syeduzzaman)
Secretary

Mr. Joseph S. Toner
Director
USAID Mission/Bangladesh
American Embassy, Adamjee Court
P.O. Box 323 Ramna
Dacca-2, Bangladesh

ACTUAL MONTHLY TSP OFFTAKES

	1974-75	1975-76	1976-77
July	4,137	4,790	5,587
August	6,018	9,146	8,346
September	3,622	4,740	4,447
October	4,633	7,937	18,383
November	7,842	12,077	18,643
December	6,390	10,831	12,420
January	10,532	16,466	11,164
February	9,928	15,521	11,116
March	9,899	11,145	8,996
April	4,721	7,603	*
May	4,741	6,453	*
June	3,612	3,209	*
Total	76,075	109,918	*

* Actuals not yet available

Source: BADC

ENVIRONMENTAL ASSESSMENT

The funds from this loan will be utilized to procure and import TSP (triple super phosphate) fertilizer into Bangladesh.

Bangladesh has a land area of 33 million acres of which about 22.5 million acres are cultivated. The increased use of fertilizer will increase the yields per acre, which are yet among the lowest in the world. The fertilizer will have a significant beneficial effect in helping the Bangladeshis increase their food production, thereby increasing the nutritional level of the farmers, as well as providing them extra money for items which will improve the quality of their lives.

Detrimental environmental effects are principally due to run-off of the irrigation water which will contain phosphate from the TSP. At some point these waters are again utilized as domestic water supply. In excess concentration, these are harmful to health. The phosphates in the drainage waters will also cause an increase in growth of aquatic nuisance plants such as water hyacinths which will, in turn, obstruct local water transportation. Another less important detrimental effect is that some spillage of TSP in storage causes corrosion of the corrugated iron sheet roofing and siding of the godowns, which usually are already in poor condition.

Of the adverse environmental effects mentioned above, the only effect which could reasonably be avoided is the spillage of TSP that causes corrosion of the corrugated iron sheeting on the godowns. This could be alleviated somewhat by better packaging and handling.

While the fertilizers in the drainage waters cause increased growth of aquatic nuisance plants, they also increase the growth of algae which in turn helps to increase fish production.

There is a continuing effort to keep inland rivers and waterways clear of water hyacinth; this is done by hand labor to clear the way for navigational purposes. The additional fertilizer being financed under this loan would not appear of significant amount to enlarge the problem beyond the capability of the Government and local people to deal with it within the normal level of effort required each year for canal and river clearing.

In a few parts of the world, ground waters containing high concentrations of nitrates (not present in TSP but present in urea) have caused hemoglobinemia in infants. However, data are not available on the nitrate content of drinking waters in Bangladesh and there is no evidence of the incidence of hemoglobinemia. This condition, if it exists, is unlikely to be aggravated by the amounts of fertilizer normally applied in Bangladesh and by the even smaller amounts that would enter the domestic water supply if the fertilizer is properly applied.

No environmental protection measures have been recommended in this report. The most important detrimental effect is the potential for domestic water pollution; this has not been a problem in those areas of Bangladesh where increased use of fertilizers has occurred. Any pollution is diminished to a miniscule amount by the enormous volume of water and the flushing action generated by the rivers which flow through Bangladesh.

The only alternative to the project would be a "do-nothing" approach. Under this condition, there would be less food production in an already food deficit country: either some of the population would be less healthy, or the food imports would have to be increased. In the opinion of USAID the beneficial effects on the economy of Bangladesh of importing fertilizer outweigh any adverse environmental effects.

AID 1020-20 (1-72)

PROJECT DESIGN SUMMARY
LOGICAL FRAMEWORK

Life of Project:
From FY 77 to FY 79
Total U.S. Funding $15 250 000
Date Prepared: 4/26/77

Project Title & Number: Bangladesh Agricultural Inputs Project III (388-0035)

NARRATIVE SUMMARY	OBJECTIVELY VERIFIABLE INDICATORS	MEANS OF VERIFICATION	IMPORTANT ASSUMPTIONS
Program or Sector Goal: The broader objective to which this project contributes: -Increase in national foodgrain production during the 1978-79 crop year.	**Measures of Goal Achievement:** - National increase in foodgrain production of at least three percent over the 1977-78 crop year.	- Bangladesh Government statistics prepared by Ministry of Agriculture. - Joint AID-Government-BADC periodic evaluations as required by project. - Independent AID field surveys. - Comparison by AID of data assembled by other agencies of the Government and by other donors.	**Assumptions for achieving goal targets:** - HYV seed available for moderate expansion. - Plant disease and pest infestation within normal bounds. - Weather and flood conditions temperate throughout the year.
Project Purpose: - Growth in fertilizer sales on an equitable basis.	**Conditions that will indicate purpose has been achieved: End of project status.** - National increase in fertilizer sales of at least six percent above 1977-78 crop year. - Increase by x factor in share-cropper purchases of fertilizer.*	- BADC monthly reports of fertilizer sales by type and by District. - Periodic joint AID/BDB/BADC evaluations as required by project. - Independent AID field surveys. - Comparison by AID of data assembled by other Government agencies and donors.	**Assumptions for achieving purpose:** - Sales for 1976-77 and 1977-78 correspond to Mission projections. - Crop/fertilizer price ratio encourages fertilizer use among non-owner cultivators. - Institutional credit becomes available to non-owner cultivators.
Outputs: 1. Adequate supply of fertilizer available at the local level. 2. Increased incentives to dealers.	**Magnitude of Outputs:** 1.a. Approximately 567,000 MT of fertilizer during 1978-79. b. All dealers able to meet local demand. 2.a. Dealer licensing process simplified. b. Dealers able to sell in local "hats". c. Dealers able to buy from nearest warehouse.	- Basic monthly reports of fertilizer sales by type and District. - Periodic joint AID/BDG/BADC evaluations as required by project. - Independent AID field surveys.	**Assumptions for achieving outputs:** - Transportation and storage will not be constraints. - Adequate current fertilizer import levels including availability normal level other donor financing. - Domestic fertilizer production at projected levels. - Government counter-smuggling efforts continue to be effective.
Inputs: BDG: -Government budget to BADC to cover fertilizer procurement of local production, salaries, dealer incentives and other operating expenses. - Issuance of implementing instructions for implementation of new system. AID $15.25 million grant for fertilizer, training and technical assistance and evaluation survey.	**Implementation Target (Type and Quantity)** BDG - Continuous arrivals of fertilizer sufficient to maintain 6 months buffer stock. $87.78 million AID - Fertilizer (TSP or other) $15,000,000 Training and Technical Assistance and evaluation surveys - $250,000 Other Donors $27.82 million.	- BADC Reports and Instructions. - AID procurement and disbursement records. - BDG budget materials. - Periodic joint AID/BDG/BADC evaluation as required by project. - Independent AID field surveys.	**Assumptions for providing inputs:** - Undertaking of Government to provide required budgetary support to BADC. - Grant funding made available. - Other donor contributions materialize

ANNEX D
Page 1 of 2

AID 1020-25 (1-72)

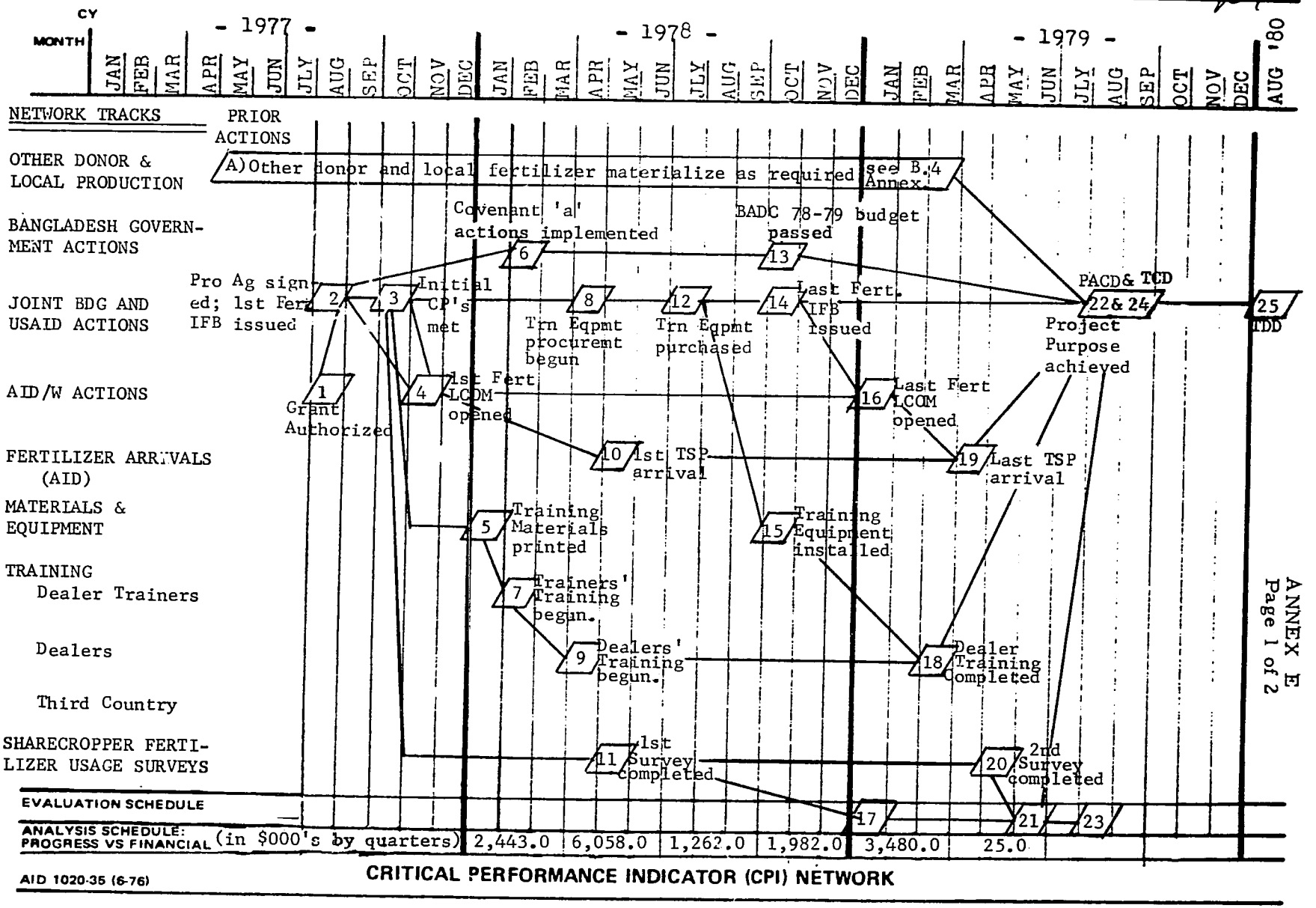
PROJECT DESIGN SUMMARY
LOGICAL FRAMEWORK

Life of Project:
From FY _____ to FY _____
Total U.S. Funding _____
Date Prepared: _____

Project Title & Number: _____

NARRATIVE SUMMARY	OBJECTIVELY VERIFIABLE INDICATORS	MEANS OF VERIFICATION	IMPORTANT ASSUMPTIONS
Program or Sector Goal: The broader objective to which this project contributes:	Measures of Goal Achievement:		Assumptions for achieving goal targets:
Project Purpose:	Conditions that will indicate purpose has been achieved: End of project status.		Assumptions for achieving purpose:
Outputs: 3. Pilot test of quantity discounts to dealers. 4. Completed surveys of sharecropper fertilizer usage.	Magnitude of Outputs: d. Allow farmers to buy from any dealer regardless of location. e. Technical training for all dealers 3. Effectiveness of quantity discount tested through comparison of sales figures for test and non-test dealerships. 4. Two surveys, one each following Boro harvests in 1978 and 1979.		Assumptions for achieving outputs:
Inputs: Other Donors Funding for fertilizer imports.	Implementation Target (Type and Quantity) * Factor increase to be determined on completion of Land Occupancy Study		Assumptions for providing inputs:

COUNTRY	PROJECT NO.	PROJECT TITLE	DATE	ORIGINAL / REVISION #	APPROVED
Bangladesh	388-0035	Agricultural Inputs III	April 30'77	X ORIGINAL	



ANNEX E
Page 1 of 2

AID 1020-35 (6-76)

CRITICAL PERFORMANCE INDICATOR (CPI) NETWORK

COUNTRY	PROJECT NO.	PROJECT TITLE	DATE		APPROVED
Bangladesh	388-0035	Agricultural Inputs III	April 30,'77	[x] ORIGINAL [ ] REVISION # ___	

PROJECT PURPOSE (FROM PRP FACESHEET)

GROWTH IN FERTILIZER SALES ON AN EQUITABLE BASIS.

CPI DESCRIPTION

A. 5/77-3/77 Local Production of fertilizer and Other Donor Imports at amounts indicated necessary to maintain a six-month buffer stock (see Annex B. 4). (USAID/Dacca)

1. 8/77 Grant Authorized. (AID/W)
2. 8/77 Project Agreement signed and first fertilizer IFB issued. (Joint BDG & USAID)
3. 11/77 Initial Conditions Precedent met. (Joint)
4. 11/77 First fertilizer LCOM opened. (AID/W)
5. 1/78 Materials for training dealers and their trainers printed. (BDG)
6. 2/78 Deadline for implementation of actions listed under Covenant 'a' Section IV D.3 Covenants. (BDG)
7. 2/78 Training of Dealer Trainers begun. (BDG)
8. 4/78 Training Institute's equipment procurement begun. (Joint)
9. 4/78 Dealer training started. (BDG)
10. 5/78 Arrival of first AID TSP shipment. (USAID)
11. 5/78 First sharecropper fertilizer usage survey completed after Boro harvest. (USAID)
12. 7/78 Training Institute's equipment purchased. (USAID)
13. 10/78 BDG passage of adequate (for this project including assumptions) BADC 1978-79 budget. (BDG)
14. 10/78 Last fertilizer IFB issued. (Joint)
15. 10/78 Training Institute's equipment installed. (BDG)
16. 1/79 Last fertilizer LCOM opened. (AID/W)
17. 1/79 First Evaluation conducted. (Joint)
18. 3/79 Dealer training completed at least 50% of active dealers trained. (BDG)
19. 4/79 Arrival of last AID TSP shipment. (USAID)
20. 5/79 Second sharecropper fertilizer usage survey completed after Boro harvest. (USAID)
21. 6/79 Second Evaluation conducted. (Joint)
22. 8/79 Project Activities Completion Date (PACD).
    a) National fertilizer sales increased at least 6% (1978-79 over 1977-78)
    b) X% increase in sharecropper purchases of fertilizer (1978-79 over 1977-78)*/ (Joint)
23. 8/79 Ex post facto Evaluation conducted. (Joint)
24. 8/79 Terminal Commitment Date. (USAID)
25. 8/80 Terminal Disbursement Date. (USAID)

*/ X% to be determined upon completion of Land Occupancy Study.

COUNTRY CHECKLIST

A. GENERAL CRITERIA FOR COUNTRY

1.	FAA Sec. 116. Can it be demonstrated that contemplated assistance will directly benefit the needy? If not, has the Department of State determined that this government has engaged in consistent pattern of gross violations of internationally recognized human rights?	Yes, it can so be demonstrated.
2.	FAA Sec. 481. Has it been determined that the governmentof recipient country has failed to take adequate steps to prevent narcotics drugs and other controlled substances (as defined by the Comprehensive Drug Abuse Prevention and Control Act of 1970) produced or processed, in whole or in part, in such country, from being sold illegally within the jurisdiction of such country to U.S. Government personnel or their dependents, or from entering the U.S. unlawfully?	No, Department of State has not so determined.
3.	FAA Sec. 620(a). Does recipient country furnish assistance to Cuba or fail to take appropriate steps to prevent ships or aircraft under its flag from carrying cargoes to or from Cuba?	The president has granted a waiver to BDG to trade jute with Cuba.
4.	FAA Sec. 620(b). If assistance is to a government, has the Secretary of State determined that it is not controlled by the international Communist movement?	Yes.

5.	FAA Sec. 620(c). If assistance is to government, is the government liable as debtor or unconditional guarantor on any debt to a U.S. citizen for goods or services furnished or ordered where (a) such citizen has exhausted available legal remedies and (b) debt is not denied or contested by such government?	No.
6.	FAA Sec. 620(e). If assistance is to a government, has it (including government agencies or subdivisions) taken any action which has the effect of nationalizing expropriating, or otherwise seizing ownership or control of property of U.S. citizens or entities beneficially owned by them without taking steps to discharge its obligations toward such citizens or entities?	In 1972 the BDG nationalized five firms which were fully or partially owned by U.S. entities. The BDG has announced a compensation policy and is taking steps to discharge its obligations toward U.S. citizens and entities.
7.	FAA Sec. 620(f); App. Sec. 108. Is recipient country a Communist Country? Will assistance be provided to the Democratic Republic of Vietnam (North Vietnam), South Vietnam, Cambodia or Laos?	a) Nc b) Nc
8.	FAA Sec. 620(i). Is recipient country in anyway involved in (a) subversion of, or military aggression against, the United States or any country receiving U.S. assistance, or (b) the planning of such subversion or aggression?	No.
9.	FAA Sec. 620(j). Has the country permitted, or failed to take adequate measures to prevent, the damage or destruction, by mob action, of U.S. property?	No.

10.	FAA Sec. 620(l). If the country has failed to institute the investment quaranty program for the specific risks of expropriation, inconvertibility or confiscation, has the AID Administrator within the past year considered denying assistance to such government for this reason?	OPIC bilateral agreement was signed January 15, 1975.
11.	FAA Sec. 620(o). Fishermen's Protective Act, Sec. 5. If country has seized, or imposed any penalty or sanction against, any U.S. fishing activities in international waters. a. has any deduction required by Fishermen's Protective Act been made? b. has complete denial of assistance been considered by AID Administrator?	Not Applicable.
12.	FAA Sec. 620(g); App. Sec. 504. (a) is the government of the recipient country in default on interest or principal of any AID loan to the country? (b) Is country in default exceeding one year on interest or principal on U.S. loan under program for which App. Act appropriates funds, unless debt was earlier disputed or appropriate steps taken to cure default?	a) No b) No
13.	FAA Sec. 620(s). What percentage of country budget is for military expenditures? How much of foreign exchange resources spent on military equipment? How much spent for the purchase of sophisticated weapons systems? (Consideration of these points is to be coordinated with the Bureau for Program and Policy Coordination, Regional Coordinators and Military Assistance Staff (PPC/RC).)	Approximately seven percent. The Soviet Union has provided a limited number of aircraft for the BDG airforce. This non-sophisticated equipment was purchased on credit at reduced prices. The BDG is not diverting development assistance funds for military expenditures.

14.	FAA Sec. 620(t). Has the country severed diplomatic relations with the United States? If so, have they been resumed and have new bilateral assistance agreements been negotiated and entered into since such resumption?	No.
15.	FAA Sec. 620(u). What is the payment status of the country's U.N. obligations? If the country is in arrears, were such arrearages taken into account by the AID Administrator in determining the current AID Operational Year Budget?	Not in arrears.
16.	FAA Sec. 620A. Has the country granted sanctuary from prosecution to any individual or group which has commited an act of international terrorism?	No.
17.	FAA Sec. 666. Does the country object, on the basis of race, religion, national origin or sex, to the presence of any officer or employee of the U.S. there to carry out economic development program under FAA?	No.
18.	FAA Sec. 669. Has the country delivered or received nuclear reprocessing or enrichment equipment, materials or technology, without specified arrangements on safeguards, etc?	No.
19.	FAA Sec. 901. Has the country denied its citizens the right or opportunity to emigrate?	No.

B. FUNDING CRITERIA FOR COUNTRY

1. Development Assistance Country Criteria

a. FAA Sec. 102(c), (d). Have criteria been established, and taken into account to assess commitment and progress of country in effectively involving the poor in development, on such indexes as: (1) small-farm labor intensive agriculture, (2) reduced infant mortality, (3) population growth, (4) equality of income distribution and (5) unemployment.	1. Yes 2. Yes 3. Yes 4. Yes 5. Yes
b. FAA Sec. 201(b)(5), (7) & (8); Sec. 208; 211(a)(4), (7). Describe extent to which country is:	
(1) Making appropriate efforts to increase food production and improve means for food storage and distribution.	Increasing foodgrain production is a major objective of the Bangladesh Five Year Development Plan (FYP). Included also in the FYP are programs for storage and distribution of food.
(2) Creating a favorable climate for foreign and domestic private enterprise and investment.	BDG policy encourages both foreign and domestic private enterprise and investment, and in January, 1975, in OPIC bilateral agreement was concluded. In addition, the new Martial Law Administration (since November 7, 1975) has particularly emphasized the role of private enterprise, is looking to the denationalization of a number of firms, and has announced a new private sector oriented investment policy.
(3) Increasing the public's role in the development process.	Implementation of Bangladesh's development plans requires a large public role in development. Cooperatives are encouraged by the Government, directly involving the public in a participation role. In addition, the national rural works program also requires a high decree of local decision-making and participation.

(4) (a) Allocating available budgetary resources to development.	Bangladesh's budgetary resources are overwhelmingly allocated to relief and development expenditures.
(b) Diverting such resources for unnecessary expenditures and intervention in affairs of other free and independent nations.	Bangladesh's military expenditures are very low in absolute and real terms. The level of defense spending is not a diversion of development funds.
(5) Making economic, social, and political reforms such as tax collection improvements and changes in land tenure arrangements, and making progress toward respect for the rule of law, freedom of expression and of the press and recognizing the importance of individual freedom, initiative, and private enterprise.	Bangladesh is predominantly a nation of small farms, and while a large proportion of these are cultivated by shareholders and lease farmers, as well as farmers who both own some land and lease or sharehold, the average area per family is still 2-1/2 to 3 acres and large holdings are the exception. Accordingly, land tenure changes while necessary in the long term equity question, are not as critical an element for the development of Bangladesh as for other LDCs. On the other question, the new Martial Law Administration has evidenced a concern for each of these; this has been manifested through tighter public administration, return of newspapers to private control, and encouragement of private enterprise. Recognition of the importance of individual freedom and initiative are also appear to be marks of the new Government. Martial Law has been extended to the country in what appears principally to be an effort to clear up carry-over problems of corruption and abuse of power. Respect for the rule of law is stated as underlying the current measures.

(6) Otherwise responding to the vital economic, political, and social concerns of its people, and demonstrating a clear determinatio to take effective self-help measures.	The new Government evidences a concern for these questions and has been taking action to improve the public service, to release economic activity from constraints formerly imposed by governmental intervention, and to alleviate conditions of the people through rural works programs, food for work and other self-help programs.
(c) FAA Sec. 201(b), 211(a). Is the country among the 20 countries in which development assistance loans may be made in this fiscal year, or among the 40 in which development assistance grants (other than for self-help projects) may be made?	Yes.
(d) FAA Sec. 115. Will country be furnished, in same fiscal year, either security supporting assistance or Middle East peace funds? If so, is assistance for population programs, humanitarian aid through international organizations, or regional programs?	No.
2. Security Supporting Assistance Country Criteria	
a. FAA Sec. 502B. Has the country engaged in a consistent pattern of gross violations of internationally recognized human rights? Is program in accordance with policy of this Section?	No, Program is in accordance.

b.	FAA Sec. 531. Is the Assistance to be furnished to a friendly country organization, or body eligible to receive assistance?	Not Applicable
c.	FAA Sec. 609. If commodities are to be granted so that sale proceeds will accrue to the recipient country, have Special Account (counterpart) arrangements been made?	Not Applicable.

A. GENERAL CRITERIA FOR PROJECT

1. App. Unnumbered; FAA Sec. 653(b)

(a) Describe how Committees on Appropriation of Senate and House have been or will be notified concerning the project; (b) is assistance within (Operational Year Budget) country or international organization allocation reported to Congress (or not more than $1 million over that figure plus 10%)?	Formal notification will be given to the Congress.
2 FAA Sec. 611(a)(1). Prior to obligation in excess of $100,000, will there be (a) engineering, financial, and other plans necessary to carry out the assistance and (b) a reasonably firm estimate of the cost to the U.S. of the assistance?	Yes.
3. FAA Sec. 611(a)(2). If further legislative action is required within recipient country, what is basis for reasonable expectation that such action will be completed in time to permit orderly accomplishment of purpose of the assistance?	None needed.
4. FAA Sec. 611(b); App. Sec. 101. If for water or water-related land resource construction, has project met the standards and criteria as per Memorandum of the President dated Sept. 5, 1973 (replaced Memorandum of May 15, 1962; see Fed. Register, Vol. 38, No. 174, Part 111, Sept. 10, 1973)?	Not Applicable.

5. FAA Sec. 611(e). If project is capital assistance (e.g., construction), and all U.S. assistance for it will exceed $1 million, has Mission Director certified the country's capability effectively to maintain and utilize the project?	Not Applicable.
6. FAA Sec. 209, 619. Is project susceptible of execution as part of regional or multilateral project?	Not so susceptible.
7. FAA Sec. 601(a); (and Sec. 201(f) for development loans). Information and conclusions whether project will encourage efforts of the country to: (a) increase the flow of international trade; (b) foster private initiative and competition; (c) encourage development and use of cooperatives, credit unions, and savings and loan associations; (d) discourage monpolistic practices; (e) improve technical efficiency of industry, agriculture and commerce; and (f) strengthen free labor unions.	The project is not directly applicable to foreign trade. It will facilitate private initiative of farmers and will liberalize regulations, leading to a freer, more competitive marketing for fertilizer distribution. It does help cooperative development, since cooperatives are involved in distribution of inputs. Increased agricultural inputs will improve the technical efficiency of agriculture sector. The project is not directed toward labor unions.
8. FAA Sec. 601(b). Information and conclusion on how project will encourage U.S. private trade and investment abroad and encourage private U.S. participation in foreign assistance programs (including use of private trade channels and the services of U.S. private enterprise).	Project will finance the importation of fertilizer. Since most of this will be from private U.S. sources this will encourage U.S.-Bangladesh trade.
9. FAA Sec. 612(b); Sec.636(h). Describe steps taken to assure that, to the maximum extent possible, the country is contributing local currencies to meet the cost of contractual and other services, and foreign currencies owned by the U.S. are utilized to meet the cost of contractual and other services.	U.S. does not own a significant amount of Bangladesh Taka. The BDG is contributing.

10. FAA Sec. 612(d). Does the U.S. own excess foreign currency and, if so, what arrangement have been made for its release?	See #9 above.

B. FUNDING CRITERIA FOR PROJECT

1. Development Assistance Project Criteria

a. FAA Sec. 102(c); Sec. 111; Sec 281a Extent to which activity will (a) effectively involve the poor in development, by extending access to economy at local level, increasing labor-intensive production, spreading investment out from cities to small towns and rural areas; and (b) help develop cooperatives especially by technical assistance, to assist rural and urban poor to help themselves toward better life, and otherwise encourage democratic private and local governmental institutions?	Use of modern agricultural inputs and increased productivity should result in chance for improvement in incomes of the rural poor, thereby helpingto give them a basis for greater participation in development, including participation in the development of and through cooperatives. The urban poor are not really addressed by the project, except to the extent rural development takes place, migration of the rural poor to the cities may be reduced.
b. FAA Sec.103. Is assistance being made avilable: for agriculture rural development or nutrition; if so, extent to which activity is specifically designed to increase productivity and income of rural poor ?	The grant is being made to help Bangladesh improve agriculture, rural development and nutrition by financing a primary agricultural input, fertilizer. It will contribute directly to increasing foodgrain yields and thereby assist the overall development of the rural sector.
c. FAA Sec. 110(a); Sec. 208 (e). Is the recipient country willing to contribute funds to the project, and in what manner has or will it provide assurances that it will provide at least 25% of the costs of the program project, or activity with respect to which the assistance is to be furnished (or has the latter cost-sharing requirement been waived for a "relatively least-developed" country)?	BDG will be providing approximately 67% of project cost.

d. FAA Sec. 110(b). Will grant capital assistance be disbursed for project over more than 3 years? If so, has justification satisfactory to Congress been made, and efforts for other financing?	No. Will not be disbursed over more than 3 years.
e. FAA Sec. 207; Sec. 113. Extent to which assistance reflects appropriate emphasis on; (1) encouraging development of democratic, economic, political, and social institutions; (2) self-help in meeting the country's food needs; (3) improving availability of trained workerpower in the country (4) programs designed to meet the country's health needs; (5) other important areas of economic, political, and social development, including industry; free labor unions, cooperatives, and voluntary Agencies; transportation and communication; planning and public administration; urban development, and modernization of existing laws; or (6) integrating women into the recipient country's national economy.	The project directly contributes to the country's self-help efforts to increase foodgrain production and meet its own food needs. Although it is not specifically directed to training of manpower or development of the institutions under (1) whatever rural income increase results from the project should assist in development or support of a rural standard of living; in augmented incomes lies the greater potential for encouraging such institutions. Similarly, health and increased roles for women, although not specifically addressed by the project, should benefit from any increase in rural income and living standards. For the items under (5), development of rural cooperatives can be expected to result from the success of this project; the other items under (4), are not sufficiently related to the project objectives to include comment.
f. FAA Sec. 281(b). Describe extent to which program recognizes the particular needs, desires, and capacities of the people of the country; utilizes the country's intellectual resources to encourage institutional development; and support civic education and training in skills required for effective participation in governmental and political processes essential to self-government.	The project is specifically targeted to the basic rural development and foodgrain production needs of the country. The accomplishment of the objectives of the project may result in increased cooperative activity and greater participation by the poorer and rural population, thus involving greater participation in basic self-government type activities and development of institutions.

g. FAA Sec. 201(b)(2) - (4) and - (8); Sec. 201(e); Sec. 211(a)(1) - (3) and - (8). Does the activity give reasonable promise of contributing to the development of economic resources, or to the increase of productive capacities and self-sustaining economic growth or of educational or other institutions directed toward social progress? Is it related to and consistent with other development activities, and will it contribute to realizable long range objectives? And does project paper provide information and conclusion on an activity's economic and technical soundness?	The project contributes directly to increasing agricultural production and indirectly to other aspects of rural development. Availability of modern agricultural inputs is critical to both.
h. FAA Sec. 201(b)(6); Sec. 211(a)(5),(6). Information and conclusion on possible effects of the assistance on U.S. economy, with special reference to an area of substantial labor surplus, and extent to which U.S. commodities and assistance are furnished in a manner consistent with improving or safeguarding the U.S. balance of payments position.	It is currently envisioned that commodities will be procured under United States source and origin, thereby contributing to U.S. labor usage and having no adverse impact on balance of payments.
2. Project Criteria Solely for Security Supporing Assistance	
FAA Sec. 531. How will this assistance support/promote economic or political stability?	Not Applicable.

STANDARD ITEM CHECKLIST

A. Procurement

1.	FAA Sec. 602. Are there arrangements to permit U.S. small business to participate equitably in the furnishing of goods and services financed?	Yes.
2.	FAA Sec. 604(a). Will commodity procurement be financed from the U.S. except as otherwise determined by the President or under delegation from him?	Yes.
3.	FAA Sec. 604(d). If the cooperating country discriminates against U.S. marine insurance companies, will agreement require that marine insurance be placed in the U.S on commodities financed?	Yes, agreement will so provide.
4.	FAA Sec. 604(e). If offshore procurement of agricultural commodity or product is to be financed, is there provision against such procurement when the domestic price of such commodity is less than parity?	Not Applicable.
5.	FAA Sec. 608(a). Will U.S. Government excess personal property be utilized wherever practicable in lieu of the procurement of new items?	Yes.
6.	MMA Sec. 901(b). (a). Compliance with requirement that at least 50 percent of the gross tonnage of commodities (computed separately for dry bulk carriers, dry cargo liners and tankers) financed shall be transported on privately owned U.S. flag commercial vessels to the extent that such vessels are available at fair and reasonable rates.	Project Agreement will so provide.

7. FAA Sec. 621. If technical assistance is financed, will such assistance be furnished to the fullest extent practicable as goods and professional and other services from private enterprise on a contract basis? If the facilities of other Federal agencies will be utilized are they particularly suitable, not competitive with private enterprise, and made available without undue interference with domestic programs?	Yes. Not Applicable.
8. International Air Transport Fair Competitive Practices Act, 1974	
If air transportation of persons or property is financed on grant basis, will provision be made that U.S. flag carriers will be utilized to the extent such service is available?	Yes.
B. Construction	
1. FAA Sec. 601(d). If a capital (e.g., construction) project, are engineering and professional services of U.S. firms and their affiliates to be used to the maximum extent consistent with the national interest?	Not Applicable.
2. FAA Sec. 611(c). If contracts for construction are to be financed, will they be let on a competitive basis to maximum extent practicable?	Not Applicable.
3. FAA Sec. 620(k). If for construction of productive enterprise, will aggregate value of assistance to be furnished by the U.S. not exceed $100 million?	Not Applicable.
C. Other Restrictions	
1. FAA Sec. 201(d). If development loan is interest rate at least 2% per annum during grace period and at least 3% per annum thereafter?	Not Applicable

2. FAA Sec. 301(d). If fund is established solely by U.S. contributions and administered by an international organization does Comptroller General have audit rights?	Not Applicable.
3. FAA Sec. 620(h). Do arrangements preclude promoting or assisting the foreign aid projects or activities of communist-Bloc countries, contrary to the best interests of the U.S.?	Yes.
4. FAA Sec. 636(j). Is financing not permitted to be used, without waiver, for purchase, long-term lease, or exchange of motor vehicle manufactured outside the U.S. or guaranty of such transaction?	Such is not permitted.
5. Will arrangements preclude use of financing:	
a. FAA Sec. 114: to pay for performance of abortions or to motivate or coerce persons to practice abortions?	Yes.
b. FAA Sec. 620(g). to compensate owners for expropriated nationalized property?	Yes.
c. FAA Sec. 660. to finance police training or other law enforcement assistance, except for narcotics programs?	Yes.
d. FAA Sec. 662. for CIA activities?	Yes
e. App. Sec. 103. to pay pensions, etc., for military personnel?	Yes.
f. App. Sec. 106. to pay U.S. assessments?	Yes.

g.	App. Sec. 107. to carry out provisions of FAA Sections 209(d) and 251(h) (transfer to multilateral organization for lending).	Yes.
h.	App. Sec. 501. to be used for publicity or propaganda purposes within U.S. not authorized by Congress?	Yes.

BANGLADESH
AGRICULTURAL INPUTS PROJECT III

CERTIFICATION PURSUANT TO SECTION 611 (e) OF THE FOREIGN ASSISTANCE ACT OF 1961, AS AMENDED

I, Joseph S. Toner, Mission Director, the principal officer of the Agency for International Development in Bangladesh, having taken into account, among other things, the maintenance and utilization by the Bangladesh Government and its agencies of projects previously financed by the United States, do hereby certify that in my judgment Bangladesh has the financial and human resources capability effectively to utilize the project to be financed by this grant.

This judgment is based upon considerations discussed in the Project Paper to which this certification is attached.

Joseph S. Toner
Director

May 6, 1977
Date

(Government Seal)

From: Dr. Fakhruddin Ahmed
Joint Secretary

D.O. No. 104/ERD/USA(P)-2/77 Dated 30.4.77

Subject: - Request for USAID Assistance to Bangladesh - Agricultural Inputs III

Dear Mr. Toner,

The Government of Bangladesh has adopted a primary objective of self sufficiency in the production of foodgrains. An essential and critical element in this effort involves adequate and increasing use of fertilizer (principally urea, TSP and MP) which requires both manufacture of fertilizer in Bangladesh and the acquisition and importation of fertilizer into Bangladesh. The total cost of meeting these needs during the 1978-79 crop year is estimated at approximately United States dollars one hundred and thirty million (US $130 million) equivalent.

Accordingly, the Government would appreciate and hereby requests the assistance of the United States Government through AID in carrying out this program, specifically the assistance through a grant of United States dollars fifteen million two hundred and fifty thousand (US $15,250,000) to the Government to assist in financing the local currency and foreign exchange costs for the acquisition and importation of fertilizer and other agricultural inputs and for training, technical assistance, materials and equipment and related services. Financing for such items would extend to the local and foreign exchange costs incurred in their acquisition, transportation, insurance, inspection and conduct of training. Other costs as agreed will be met by the Government, including the costs of inland distribution of the fertilizer.

Please let me know if we can provide you with any further information.

Yours sincerely,

/s/
(Fakhruddin Ahmed)
Joint Secretary

Mr. Joseph S. Toner
Director,
USAID, Daccca

BANGLADESH
AGRICULTURAL INPUTS PROJECT III
FY 1977

Project Description

The Government of Bangladesh, under its First Five-Year Plan, has adopted a primary objective of self-sufficiency in the production of foodgrains. The Project of which this Grant is a part, consists of the manufacture of fertilizer in Bangladesh and the acquisition and importation into and inland distribution within Bangladesh of necessary agricultural inputs (principally urea, TSP and MP) to increase foodgrain production, as well as related activities to the same purpose. The total cost of meeting these needs for the 1978-79 crop year is estimated to be approximately $130 million equivalent for fertilizer and related distribution costs.

The AID Grant for $15.25 million will provide a portion of the local currency and foreign exchange financing for the Project. Eligible items for which such financing may be used are TSP imports, training, technical assistance, materials and equipment and such other fertilizer and inputs and related services as AID may agree to in writing. Financing for such items shall extend to foreign exchange and local currency costs incurred in their acquisition, transportation, insurance, inspection and implementation all in accordance with the provisions of the Project Agreement and Implementation Letters.

All other local currency costs of the Project will be met by the Government of Bangladesh, including all costs of inland distribution of the fertilizer or other agricultural inputs financed by the Grant.

PROJECT AUTHORIZATION
(Draft)

Name of Country : Bangladesh

Name of Project : "Agricultural Inputs III"

Number of Project : 388-0035

Pursuant to Part I, Chapter I, Section 103 of the Foreign Assistance Act of 1961, as amended, I hereby authorize a Grant to BANGLADESH, the "Cooperating Country", of not to exceed fifteen million two hundred and fifty thousand (15,250,000) United States Dollars (the "Authorized Amount") to help in financing certain foreign exchange and local currency costs of goods and services required for the project as described in the following sentence. The project consists of the manufacture of fertilizer in the Cooperating Country and the acquisition and importation into and inland distribution within the Cooperating Country of necessary fertilizer and agricultural inputs, as well as related activities to the same purpose.

The entire amount of the A.I.D. financing herein authorized for the project will be obligated when the Project Agreement is executed.

I hereby authorize the initiation of negotiation and execution of the Project Agreement by the officer to whom such authority has been delegated in accordance with A.I.D. regulations and delegations of authority subject to the following essential terms, covenants and major conditions; together with such other terms and conditions as A.I.D. may deem appropriate.

a. Source and Origin of Goods and Services

Except for ocean shipping, goods and services financed by A.I.D. under the project shall have their source and origin in the Cooperating Country or in the United States except as A.I.D. may otherwise agree in writing. Ocean shipping financed under the Grant shall be procured in any eligible source country except the Cooperating Country.

b. Grantee shall covenant that it shall contribute at least 25 percent of the cost of the entire project.