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COUNTRY STUDY REPORT

on the

STATUS OF AGRICULTURAL MACHINERY INDUSTRY

in

PAKISTAN

Information compiled
during
a fact finding survey.

UNIDO, Vienna
January 1969

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* Note: The opinions expressed in this document do not necessarily reflect the views of the Secretariat of ECAFE or that of UNIDO.

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Summary of Country Study

on Pakistan

I. Agricultural Pattern

Pakistan consists of two grographic units East and West Pakistan replaced by about 1600 km of Indian territory. Total area is 94.5 millions of hectares, 80.3 for West Pakistan and 16.2 East Pakistan. Total cultivated area is 25.3 million ha (16.6 WP - 8.7 EP) with expansion possibility on in West Pakistan.

Total population is 119 million (53.5 WP, 63.5 EP). Population pressure upon cultivated land is: total 4.7 persons by hectare - WP 33.2, EP 7.6. The latter being very high.

About 75% of population is engaged in agriculture. Main crops are for W.P.: wheat and other food grains. 42% of cultivated area, rice 7.5%, cotton 8%, for EP rice 98%. In East Pakistan 75% of cultivated land is non-irrigated and 20% regularly flooded.

In West Pakistan 64% is irrigated and intensive efforts are made for reclaiming and irrigating part of 10.4 million hectares which can be used for cultivation.

The average size of holdings is very small in East Pakistan, around 1.4 ha for 6.1 millions of holdings. In West Pakistan size is much higher around 3.4 ha for 4.86 millions of holdings of which 300,000 are more than 10 ha.

II. Farm Mechanization Pattern

In West Pakistan, more than 20,000 tractors are used and there is a great demand for them mostly in the range of 35/50 HP. This demand will be around 4,000 a year in 1970 and 7000 in 1975. There is also a good scope for diesel engines, irrigation pumps and deep-well pumps, wheat and paddy threshers,

/combines,

combines, rice processing equipment and implements for tractors including power sprayers.

In East Pakistan demand for tractors is smaller 1000/1500 for 1970 and 3000/6000 for 1975 but power tillers will be widely required (1500 for 1970 and 4000 for 1975) - Demand will be important for diesel engines, irrigation pumps, paddy threshers, sprayers and there is an urgent need for rice processing equipment suitable for local conditions.

III. Manufacturing farm machinery industries - other industries and ancillary facilities

For tractors one plant in West Pakistan is manufacturing hardly 500 units a year. Another is assembling on a larger scale 1500/2000 and has plan for progressive manufacturing. 3 other companies have been recently licensed for minimum capacity 500 each - every of them for 35/45 HP tractors.

Four companies are producing diesel engines and they have capacity for meeting total demand providing they improve their quality and standardize their fabrication. The situation is similar for irrigation pumps. No plan exists really for production of power tillers.

Several companies are beginning to produce wheat-threshers but there is a few need for developing manufacturing of other farm implements.

Supporting industries have limited facilities in West Pakistan only but foundries, forges and production of machine tools is starting on a large scale by the governmental sector. Very limited facilities exist also for ancillary components.

IV. Conclusion

West Pakistan is a good market for tractors in the medium large power range (35/45 HP), for diesel engines, pumps, wheat threshers and many other

/farm

farm implements.

East Pakistan for the present needs mainly diesel engines, pump, sprayers, and simple rice implements and power tillers for a near future.

Existing plans for production of tractors have to be speed up and possibly improved considering regional cooperation. Manufacturing of diesel engines and pumps must be improved for better standardization and better quality.

Production of wheat-threshers has to be encouraged to likewise this a re of many other implements by the medium scale sector.

It is also urgently necessary to consider local manufacturing of rice processing equipment suitable for local conditions.

SECTION I

GENERAL PATTERN OF AGRICULTURE

Pakistan consists of two geographical units - East and West Pakistan - separated by about 1100 miles of Indian territory. Total area of the country is 947,000 square km; East Pakistan comprises of 143,000 square km, compared with 804,000 square km of West Pakistan. Out of the total population of 119 million, East Pakistan has 460 persons per square km - one of the most densely populated areas of the world - and West Pakistan has 67 persons per square km.

1. Land Utilization

a) Land Distribution by Nature

Out of the 93.9 million hectars of total geographical area, net cultivated area is 25.26 million hectares with 10.41 hectares of addition area potentially capable of being brought under cultivation as shown in table 1.1.

Table 1.1

Land Utilization by Provinces
C Million

	E. Pakistan	W. Pakistan	Total
Total area	14.2	79.7	93.9
Net area sown	8.1	13.4	21.5
Current fallow	0.56	3.2	3.76
Total cultivated area	8.66	16.6	25.26
Forest area	2.2	1.25	3.45
Not available for cultivation	2.24	12.7	14.94
Other cultivable land	0.76	9.65	10.41
Area not reported	0.24	39.5	39.74

/2.

b) Land Distribution by Crop and Agricultural Production

(a) Area

Out of the total area under crops, 86% of the area are under food grains. Rice and Jute are main crops in East Pakistan while wheat and cotton are major crops in West Pakistan as shown in table 1.2.

Table 1.2

Area of Major Crops (1964-65)
(000 hectares)

Crop	East Pakistan	West Pakistan	Total
Rice	8,750	1,230	9,980
Wheat	59	4,950	5,009
Other food grains	355	1,655	2,000
Sugar cane	127	465	592
Cotton (lint)	16	1,284	1,380
Jute	693	-	693
Tobacco	41	44	85

(b) Production of major crops

Production of major crops is given in table 1.3

Table 1.3

Production of Major Crops*
(000 tons)

Crop	East Pakistan	West Pakistan	Total
Rice	9,709	1,133	10,842
Wheat	36	4,085	4,121
Other food grain	21	1,223	1,244
Sugarcane	4,943	15,599	20,542
Cotton (lint)	3	354	358
Jute	1,002	-	1,002
Tobacco	28	72	100

* Average for five years ending 1964-65

/(c)

(c) Yield per Hectare

Average yield per hectare is given in Table 1.4

Table 1.4

Average Yield per Hectare

(Average 1960-61 — 1964-65)

(kg/hectares)

Crops	East Pakistan	West Pakistan	Estimatd Pakistan Potential
Wheat	635	840	1800 - 2000
Maize	795	1050	2300
Rice	1130	955	2300
Barley	600	648	2300
Pulses	700	420	900 - 2300
Cotton (liut)	187	252	1150

It is estimated by experts that Pa kistan has high potential to increase the yield per acre significantly, if proper inputs are made available combined with modern farming techniques. From the past two years, due to emphasis on agriculture and interrated input application techniques, yield per acre has greatly increased in selected large areas of Pakistan.

It is felt that scope of bringing new lands under plow is limited in East Pakistan. However 9.5 million hectares in West Pakistan which may be brought under cultivation appears to be large. However considering arid and semi arid conditions, it is estimated that not more than 1.2 - 1.5 million hectares of additional land can be brought under irrigation during next decade, even after tapping the water resources more fully. The remainder of land is fit for

/development

development of pasture areas for livestock. The problem of additional land to be brought under cultivation is to be tackled with diminishing existing cultivated area due to waterlogging and salinity. It is estimated that 25,000 to 40,000 hectares are lost annually due to the above two factors. From past couple of years integrated efforts are made to overcome this problem.

c) Land Distribution by Size of Holding

In East Pakistan 8.60 million hectares of cultivable land is divided into 6.1 million farms and occupied by 48 million farm people. In West Pakistan 19.58 million hectares of cultivable land which includes 10.8 million ha of irrigated area is divided into 4.86 million farms occupied by 33 million people. Tables 1.5 and 1.6 give distribution pattern of farm holdings by numbers and area covered.

Table 1.5

Distribution Pattern of Size of Holdings by Numbers (1960) (000 numbers)

	Total Pakistan	East Pakistan	West Pakistan
Less than 2 ha	7,188	4784(78)*	2404(49)
2 - 5 ha	2,481	1141(19)	1340(28)
5 - 10 ha	917	188(3)	729(15)
Above 10 ha	415	26	389(8)
	12,001	6137	4862

(* Figures in bracket are percentage of total)

/Table 1.6

Table 1.6

Distribution Pattern of Size of Holdings by Area
1960 - (in 000 hectares)

	Total Pakistan	East Pakistan	West Pakistan
Less than 2 ha	5540	3700(42)	1840(10)
2 - 5 ha	7642	3342(39)	4300(22)
5 - 10 ha	6230	1230(14)	5000(26)
Above 10 ha	8920	420(5)	8400(42)
Total	28372	8692	19500

Although 3% of holdings in East Pakistan and 23% of holdings in West Pakistan of holdings ab ove 5 hectares command 19% and 66% of total area respectively fragmentation of land is one of the major problems towards a pplication of modern agricultural techniqu s. In East Pakistan about 10% of total number of holdings representing 4% of total a rea and in West Pakistan 37% of the total number of holdings representing 19% of total a rea is not fragmented. The government have started certain progr ms towards land consolidation.

The cropwise distribution pattern of Farm holdings by size is given in Table 1.7 and Table 1.8 in West Pakistan and East Pakistan respectively

/Table 1.7

Table 1.7

Cropwise Farm Size Distribution Pattern in West Pa kistan
(1960)

Item	Overall Total	Wheat			Cotton	Sugar	Paddy
		Total	Irrigated	Non Irrigated			
I. Number Holdings in Millions							
Total Farms Reporting	4.86*	3.18	2.10	1.30	1.17	0.94	0.92
a) Small Farms Reporting (0-2 ha)	2.40	1.28	0.73	0.61	0.27	0.24	0.32
b) Medium Farms (2-5 ha)	2.07	1.60	1.15	0.59	0.76	0.59	0.52
c) Large Farms (above 5 ha)	0.39	0.29	0.21	0.11	0.14	0.11	0.08
II. Area in Million Hectares							
Total Farms Reporting	19.58	5.19	3.30	1.90	1.35	0.40	1.28
a) Small Holdings	1.83	0.66	0.36	0.29	0.10	0.06	0.16
b) Medium Holdings	9.40	3.03	2.00	1.06	0.83	0.26	0.88
c) Large Holdings	8.35	1.50	0.94	0.55	0.42	0.08	0.24

* Total figures vary compared to sum of major crops due to some farms reporting multicrops.

From the above table it is seen that in general there are sufficient number of medium andlarge holdings commanding the majority a re

/Table 1.8

Table 1.8

Cropwise Farm Size Distribution Pattern in East Pakistan

(1960)

Item	Numbers in millions			Area in million hectares		
	Total	Rice	Jute	Total	Rice	Jute
Total Number of Farm holds	6.14	5.65	2.78	8.68	8.44	0.52
Farms Holdings Reporting Rice (less than 2 ha)*	4.79	4.30	2.02	3.72	3.86	0.27
Farms Holdings (2-10 ha)	1.33	1.33	0.66	4.55	4.30	0.23
Farms Holdings (above 10 ha)	0.02	0.02	0.10	0.41	0.28	0.01

* Figure in bracket represents average commanded area by each hodlings

** Total figures may not agree with sum of major crops as some farms reporting multicrops

From the above table it is seen that holdings of small and medium size are in significant numbers commanding a major area of cultivated land.

d) Land Distribution by Type of Holdings

Ownership pattern of holdings is shown in table 1.9. It is 61% and 41% of holdings in East and West Pakistan respectively owned by owner farmers, commanding a cultivated area of 45% and 38% of total respectively.

/Table 1.9

Ownership Pattern of Holdings
(1960)

	East Pakistan		West Pakistan	
	Number of Farms	Area (000 ha)	Number of Farms	Area (000 ha)
Total	6139	8692	4860	19580
Owner Farms	3731(61)*	4660(54)	1998(41)	7450(38)
Owner cum Tenant	2308(37)	3935(45)	834(17)	4500(23)
Tenant Farmers	100(2)	96(1)	2028(42)	7630(39)

* Figures in bracket represents percentage of total

e) Land Reforms

(a) West Pakistan

The Land Reform Laws initiated in 1955 aimed at confirming ownership rights on the tiller and discouraging absentee landlordism and also put a ceiling on the average of ownership. The present land ceiling act limits ownership to 200 hectares of irrigated land and 400 hectares of non irrigated land through directed cultivation in West Pakistan. The Land Reform Acts affected 6000 farm familities and about 1 million hectares of land was resumed by the government from the landlords with additional land about ceiling limit and the same was distributed to other farmers and landless farm labourers and tenant farmers.

2. Cattle Population

The cattle population is as detailed below:

	East Pakistan	West Pakistan
Bullocks	6610	6636
Cows	2800	(
Buffaloes	333	(2213
		(

/3.

3. Farm Income

(a) West Pakistan

No reliable data could be collected regarding the same. The farm harvest prices in West Pakistan in 1965-66 was as follows:

	Average Harvest Price in Rupees per ton
Rice (average)	300 - 450
(special)	800 - 1100
Maize (corn)	380 - 450
Cotton (American)	800 - 1050
(local)	720 - 800
Sugarcane (wet)	45 - 60
Village made sugar (GUR)**	450 - 780
Wheat	430 - 500

(6-8% recovery from sugar cane)

It is felt that farm harvest prices have gone significantly high during 1968-69. Although a rough estimate is that in general it might have gone up by about 20-25%. No reliable data could be collected.

(b) East Pakitan

The average farm harvest prices in 1966-67 was as follows:

	Rupees/ton
Rice	1000
Jute	750
Sugar cane (wet)	55
Mustard	1270

/4.

4. Farming Practices

In West Pakistan, most of the farming of wheat, sugarcane, millets, paddy and cotton is on a relatively large scale, as the average size of holding is about 4 ha. Soils vary from heavy clay to sandy loam, Waterlogging and salinity are major problems. Irrigation is used extensively. 64% of the area cropped is irrigated and rest rain fed. Most of the farm operations are done manually with bullock power. However from the past few years, usage of tractors in implements, pumps, diesel engines and wheat threshers has started on a significant scale. In East Pakistan, Jute and rice are major crops. All operations are done manually with animal power. Usage of power machinery is limited at the present.

In East Pakistan there are 3 major rice types of paddy. Aman (transplant July, Harvest November-December), AUS (Transplant March-April, Harvest June-July) and Boro (Transplant Dec-Jan,, Harvest April-May). Aus paddy accounts to 68% of total paddy cultivated. Jute is sown in March-April and harvested in June - September. Around 10% of area is under 3 rice crops a year, 50% under 2 crops/year and 40% under one crop.

/SECTION II

SECTION II

PATTERN OF FARM MECHANIZATION

1. Farm Machinery Population

No reliable data is available regarding actual machinery population in Pakistan. The following table gives the Present estimated population

Table 2.1

Estimated Farm Machinery Population

	East Pakistan	West Pakistan
Tractors (Track & non agricultural)	75- 100	1000 - 2000
Tractors (Agricultural)	1200 - 1300*	20000 - 22000
Power tillers	2000 - 2500	less than 50
Tube well pumps	not known	50000 - 60000
Centrifugal pumps	11041	not known
Diesel engines	not known	not known
Wheat threshers	20 - 50	1500 - 2500
Combine harvesters	3	20 - 30
Hand Sprayers & Dusters) Power Sprayers & Dusters)	20000 - 25000	5000

* As estimated by private tractor dealers, official estimates: around 500 - 600.

(a) West Pakistan (Tractors)

(i) Distribution Pattern by Makes

It is estimated that maximum number of tractors of any one make is Massey Ferguson. The total population of Massey Ferguson is estimated to be around 9000 - 10000.

(ii) Distribution Pattern by Horse Power

Out of about 20,000 population, it is estimated that about 70% are in the horse power range of 35-50, 20% between 50-70 Hp and 10% above 70 Hp.

/b)

(b) East Pakistan (tractors)

(i) Distribution Pattern by Makes

The following is the estimated break down of tractor population with respect to models.

Massey Ferguson	1000
Fordson	150
International Harvester	150
U.S.S.R. Makes	100
Other makes	50
Estimated total	1450

(ii) Distribution Pattern by Horse Power

It is estimated 2/3 population is of 35 - 50 Hp and 1/3 about 50-65 Hp.

2. Imports and Production of Farm Machinery

I. Imports

A. Tractors

Table 2.2 shows import of tractors into Pakistan on private and public accounts:

Table 2.2

Import of Tractors to Pakistan

(Value in Rupees)

Period	Private (Rs.)	Public (Rs.)	Total (Rs.)
Jan-Dec, 1955	5710966	-	5710966
1956	4529117	-	4529117
1957	5255555	2269562	27951217
1958	6546062	10334116	16880178
1959	4617946	6421990	11039936
1960	16282322	8650784	24933106
1961	12866913	4355705	1722618
1962	17631458	1809299	19440757
1963	1621103	1284139	17705242
1964	22060431	5317305	27377736
1965	28518670	53655907	34154577
1966	-	-	57367776

Complete data about the actual number of tractors imported in the country is not available.

b) West Pakistan

The present imports are normally about 3000 tractors per year. Out of 3000 tractors, about 60% are 35 to 50 Hp range, estimated to be as follows.

Massey Ferguson MF 135	70%
John Deere 510 and Deutz	30%

/About

About 40% are in the range of 55-60 horsepower estimated to be

International Harvester B-450 and 434	30%
Ford 4000	30%
John Deere 56 Hp	30%
Bylarus 50 Hp	10%

This year about 350 Fiat tractors Model 450 (45 Hp) and Model 650 (65 Hp) are being imported.

Small quantities of Holder 4 wheel Drive 20 Hp tractors and 28-30 Hp Deutz tractors are also imported. A small quantity of tractors of about 100 Hp (30-35 units/year) are imported.

The import of tractors is primarily dependent on I.D.A. loans. The previous I.D.A. loan was Rs. 3 million distributed among 5 major importers.

b) East Pakistan

Average imports per year for the past 3 years is estimated to be around 300 units, out of which about 250 are 35-50 Hp and about 50 are 50-60 Hp.

It is reported that the I.D.A. loan of Rs. 1 million was allocated in to East Pakistan. Rs. 0.66 million was allotted to import of International Harvester tractors.

4 BMC minitractors are expected to be imported to East Pakistan for testing.

The present policy of Government of Pakistan restricts import of tractors below 45 Hp.

II. Production

For the present assembly of tractors from subassemblies, manufacture

/of

of Diesel Engines, centrifugal pumps, deep well pumps, hand sprayers, power wheat threshers, tractor drawn implements, bullock drawn implements and hand tools exists in West Pakistan. In East Pakistan manufacturing facilities for centrifugal pumps, deep well pumps, hand sprayers, bullock drawn implements and hand tools exists. The following table 2.3 gives the estimated production capacities.

Table 2.3

Estimated Existing Major Manufacturing Facilities for Farm Equipment in Pakistan

(in units)

Item	Total			West Pakistan			East Pakistan		
	No. of Units	Production Capacity 1968		No. of Units	Production Capacity 1968		No. of Units	Production Capacity 1968	
1 Tractors 30-45 Hp	2	1700	3500	1	1700	3500	-	-	-
2 Diesel Engine 10-30 Hp	4	11500	17000	3	9000	14000	1	2500	3000
.Centrifugal pumps	3	12500	19000	2	9000	15000	1	3500	4000
4 Deep well pumps	3	3000	3200	2	800	2000	1	1000	1200
5 Thresher wheat - Power Driven	2	950	2000	2	950	2000	-	-	-
6 Sprayers (hand operated)	3	8500	15000	2	7500	10000	1	less than 1000	5000

/3.

3. Demand and Sale of Farm Machinery

A) Demand for Tractors:

a) West Pakistan

From the past couple of years, demand for tractors and utilization has greatly increased. The provisional analysis of the tractor committee reveals that tractors are owned by farmers with 4-8 ha holdings. The supply has not been able to cope up with demand. The main difficulty in supply is the allocation of foreign exchange for imports. The present import of tractors is mainly based upon barter agreements and credit. Sufficient funds are not available for import of necessary spare parts for overall population. At the present 8-9 makes of tractors are being imported. The "Tractor Committee" is of the opinion that number of makes of tractors to be imported should be limited.

The present rate of imports of tractors to West Pakistan is about 3000 tractors of which about 2000 are in the range of 45-50 Hp and about 1000 in the range of 55-60 Hp. About 5 years back the trend in usage was in the range of 35 Hp tractors which has increase to 45-50 horsepower at the present.

b) East Pakistan

Out of the population of around 1400 tractors, the following distribution pattern is estimated:

Ten gardens	250
Agricultural Development Corporation	200
Paper Mills	100
Sugar Mills	100
Comilla Coop Society	60
Individuals	700
Total around	1400

About 50% of tractors are mostly used on paddy lands

Price of 40 Hp tractor is around Rs. 13,000, disc plow Rs. 2300 and disc harrow Rs.1500. Presently as disc plows and disc harrows are widely used with tractors. The Present demand for every 100 tractors is estimated to be 70-75 disc plows, 50-60 disc harrows and 10-15 rotary tillers. Very few cage wheels are used. The paddy fields are firts disc plowed and then paddled mainly with disc harrow

B) Power Tillers

a) East Pakistan

It is felt that the present demand is around 100 units a year

C) Diesel Engines

a) West Pakistan

The diesel engine of 10-30 horsepower, mostly slow speed of Rustow type are produced mostly by 3 manufacturers, about 9000 a year with an installed capacity of 14,000/year. Total production of all manufacturers may be 10,000 units/year. These are mostly used in places where no electricity is available for water pumping, flour mills etc. However with extension of village rural electrification the demand will be less.

b) East Pakistan

Most of the diesel engine requirement is for operating pumps owned by Agricultural Development Corporation upto now 26,000 are expected to be used as follows:

	Deutz	6000
	Ruston	17000
	Slavia	3600
	Total	26,600

/The stock

The stock of as on January 1969 was 13,000 engines with additional 17,000 are expected to be imported before March-April 1969.

D) Pumps

a) West Pakistan (Tubewell)

The Government of West Pakistan undertakes installation of tube wells has increased from 6000 in 1958 to 63,000 in 1968. The population will read 75,000 in 1969. The annual rate of installation is about 8000 - 10,000. For the present about 13 -14 million hectares are irrigated through cannals. The availability of water even in commanded areas is limited. This shortage will more accute for multicropping areas. Hence it has become necessary to supplement canal irrigation through tube wells.

The total number of tube wells installed by the government and private sources in West Pakistan is given in Table 2.4 and 2.5

Table 2.4

NO. OF TUBEWELLS IN WORKING CONDITION IN WEST PAKISTAN

YEAR	GOVERNMENT	PRIVATE	TOTAL
1963-64	1504	22952	24456
1964-65	2280	30990	33270
1965-66	4111	38947	43058
1966-67	5061	47811	52872
1967-68	6050	53950	60000

/Table 2.5

Table 2.5

NO. OF TUBEWELLS BY TYPES

(WEST PAKISTAN)

Year	Electric	Diesel	Total
1963-64	7617	16839	24456
1964-65	11809	21461	33270
1965-66	17101	25957	43058
1966-67	21462	31410	52872
1967-68	-	-	60000

b) East Pakistan (low lift & centrifugal)

The Amon paddy grown in rainy season do not require irrigation. However early AUS and Boro crops need irrigation. The 1-2 ~~engines~~ cgs pumps with engine are mostly owned by the Agricultural Development Corporation. About 3000 fractional capacity low lift pumps have been imported so far by private sectors. Regarding 1-2 cgs engine driven pumps, engines are imported, but pumps are bought for the local sources.

Total stock of pumps with diesel engines with A.D.C.

By February 1969	17,000 units
By September 1969	12,000 units
Total stock	29,000 units

The hiring system by Agricultural Development Corporation is through "Basic Democracy 11 units which in turn make it available to the farmer for usage only. Upto now the total usage was on free basis,

/total

total cost of 2 cgs pump operation per year being Rs. 4000/-. For this year, farmer will bear Rs. 1500/- worth fuel cost per season. However this amount will be subsidized through the funds of "Basic Democracy" units. By 1975 it is expected that the total cost of operation of pumps will be borne by the farmers. It is expected that a group of 30 farmers will be organized involving about 25 hectares of land. An organization requiring pump usage involving 300 pumps units zones for maintenance, 40 pump subunits with irrigation officer and 15 pump subunits with field mechanics and formation of zonal Lead offices, zonal workshops, Thana (district) workshops and training program for field mechanic and farmers have been worked out.

E) Sprayers & Dusters

a) West Pakistan

For the present hand sprayers, power sprayers (knapsack)and trolley mounted sprayers are used.

b) East Pakistan

It is felt that at present there is not a great demand for hand sprayers. The demand is to be created through intensive extension work. The sprayers are mostly sold to Agricultural Development Corporation, tea estate and plant protection department. The average demand for Hudson type hand sprayers now is about 5000 - 7500 units/year.

F) Threshers

a) West Pakistan

Power wheat threshers are being manufactured in West Pakistan. It is run by electric motor, engine for tractor. The estimated present demand is around 5000 units a year. These wheat threshers have been introduced only a year back and have been designed with special spike

/type

type drum for conveniently threshing new varieties of wheat and for chopping straw for feeding cattle (Bufa).

No rice threshers are being used at present.

b) East Pakistan

Only a few paddy threshers, less than 50 are used in East Pakistan. Pedal operated and hand operated threshers are a few. It is felt that import in significant quantities and extension work are necessary.

G) Combine Harvesters

a) West Pakistan

For the present there are only a few combines less than 25 units in operation. The government has sanctioned import of a significant number of full type and self propelled combines for experimentation (Allis Chalmers All Crop)

b) East Pakistan

There are only three combine harvesters in East Pakistan. One self propelled MF combine, for rice at Comilla, two wheat combines (one MF and other Massey Harris self propelled which is out of order).

The present problem in self combining paddy is of waterlogging during harvest season.

H) Rice Dryer

a) East Pakistan

Although Agricultural Development Corporation has placed importance on the same, there are neither imported or locally made dryers. The Commilla Academy is fabricating one and Agricultural Engineering Research Division has built a prototype.

/4.

4. Future Demand and Trend in Design

A. Tractors

(a) West Pakistan

It is felt that the trend in usage of horsepower has increased from 35 about 5 years back to 45-50 horsepower at the present. It is to be pointed out that this trend is because of same tractors imported before are now been remodeled to a higher horsepower with limited other design changes in most of the cases. However the demand of 3000 - 4000 tractors of 45-55 Hp and 1000-1500 tractors of 55-65 Hp by 1969-70 is expected to increase to 6000 - 7000 and 3000 - 4000 tractors respectively by 1974-75. The demand for tractors in the higher horsepower range is anticipated to be of higher percentage in 1975 than the demand at present.

(b) East Pakistan

The maximum demand will be in the range of 30-45 Hp tractors. The demand by 1969-70 is estimated to be about 500 and is expected to increase to about 1000-1250 in 1974-75. Although a desire for having a light weight, compact economical "paddy tractor" is expressed, it is felt that presently imported small tractors of about 20-25 Hp is too expensive as compared to tractors of 45-50 Hp.

B. Power Tillers

(a) West Pakistan

The present population of power tillers is only less than 50 units No serious attempts have been made to introduce power tillers on a significant scale. According to 1960, number of rice holdings are about 920,000 of which 320,000 (35% total rice holdings) are small holdings, 520,000 (56%) are medium holdings and 80,000 (9%) are large holdings.

/From the past

From the past 10 years, irrigational facilities have greatly improved. Hence it can be reasonably assumed that higher percentage of total area is covered by rice. As a matter of fact, from 1959-60 to 1964-65, around 7% more area was cover by rice.

In general it may be expected that larger holdings may use riding tractors effectively, there is a place for power tillers in medium holding. The economic conditions of farmers in small holdings may not readily accept a power tiller in the near future.

Hence it may be desirable to import a significatn number of power tillers and evolve and effective demonstration and extension programs to attract "a class of farmers" in the usage of power tillers. The future of power tiller usage can be evaluated in the light of the above experimentation program.

(b) East Pakistan

There appears to be a good market for power tillers in East Pakistan's farm. It is seen that almost 100% of holding area is used for paddy growing. There may be opportunity of larger holdings to use riding tractors, a large percentage of medium holdings may offer potential market for power tillers. Power tillers have been recently introduced. It is felt that present demand is around 1000 units a year will increase to 1500 by 1969-70 and about 4000 by 1974-75.

C. Engines

a. Demand for 1-2Hp gasoline micro engine will increase for about 10,000 by 1969-70 to about 15000 to 20,000 by 1975.

b. Demand for 3-5 Hp powerine/kerosine/gasoline engines will increase from 4000 by 1970 to 8000-10000 by 1975.

c. Demand for Diesel 3-15 Hp engine will increase from around 25,000 by 1970 to 50,000 - 65,000 by ~~1975~~ 1975.

(1)

(i) West Pakistan

It is to be pointed out that most of the diesel engines currently produced in Pakistan are slow speed, heavy, large size stationary engines either of vertical or horizontal type. There is a need to manufacture compact high speed diesel engines. The demand for slow speed diesel engines may increase slowly due to extension in rural electrification.

(ii) East Pakistan

High speed compact diesel engines are necessary for power tillers and low lift pump usage and slo speed engines for higher capacity pumps.

c. Demand for diesel engines of 12-30 Hp will increase from about 5000 in 1969-70 to about 15,000 by 1975. The demand will depend upon the extent of extension of rural electrification ~~xxxxxxxxxxx~~ scheme in WEST PAKISTAN.

D. Pumps

(i) The demand for hand pumps will be limited

(ii) Demand for 2-4" centrifugal pumps will increase from 20,000 in 1970 to around 50,000 by 1975. There is a necessity to introduce low lift paddy propelled pumps in East Pakistan.

(a) East Pakistan (2 cfs pumps)

By end of 1969, the Agricutlrual Development Corporation is expected to own about 28,000 engine driven pumps with addition 16,000 power pumps with the anticipated assistance from the World Bank. Thus a total of about 45,000 power pumps is expected to be in operation by 1971-72. Taking into account the wurface water availability, it is felt by the Agricultural Development Corporation that no further power pumps may be necessary. A replacement market of about 5000 pumps units a year is

/anticipated.

anticipated. However no policy has been formulated regarding the pump requirement during IV plan period.

(iii) Demand for tube wells will increase for around 14,000 by 1970 to around 14,000 by 1970 to around 35,000 in 1975 in Pakistan.

a) East Pakistan

Experiments are being conducted to evolve a cheaper mode of construction and installation of tube wells. The projected number of installations of tubewells in IV plan period (1971-75) is 12,000 numbers.

E) Plant Protection Equipment

a) West Pakistan

Demand will be in the future mainly for mounted tractor sprayers for cotton, sugar cane and maize and for knapsack sprayers for rice. However it is reported that successful tests have been made in paddy fields with granular pesticides to be broadcast in water and that could in the future limit the use of knapsack sprayers.

b) East Pakistan

For the present hand sprayers are mostly used. In 1966-67, Department of Agriculture indented 10,000 sprayers. However in 1967-68 no sprayers were imported due to lack of foreign exchange. In 1968-69, it is intended to import from Yugoslavia. The demand for hand sprayers by 1975 is expected to be around 50,000 units/year.

The following trend is expected in Pakistan:

(i) Hand sprayer demand will go up from around 15,000 by 1969-70 to around 50,000 by 1975, the demand mostly being in East Pakistan.

/(ii)

(ii) Considering the existing "controversy" regarding the merits of "Hudson Type" and Japanese type, so called "JIS Type" hand sprayers, according to the recommendation by the Japan consulting institute", as it is recommended to use "Hudson" type as it is already widely used and is manufactured, although JIS type has certain merits over Hudson Type.

(iii) The demand for 1-2 Hp knapsack sprayer will go up from around 10,000 in 1970 to around 20,000 by 1975. In West Pakistan the demand trend will be towards tractor mounted sprayers and in East Pakistan towards boom and power tiller mounted sprayers.

F. Threshers - Paddy

a) West Pakistan

The existing wheat threshers are suitable for 'indica' type paddy. However it may not be efficient with 'Japanica' variety of paddy. The present Japanese type threshers, - it is felt - has low capacity. Hence it may be necessary to develop larger capacity rice threshers. Assistance in procuring a prototype from International Rice Research Institute is desirable.

i) Demand for pedal operated thresher will be limited

ii) Demand for power operated thresher may be around 5000 by 1975 if a suitable thresher can be introduced.

b) East Pakistan

Although a few pedal threshers are used, the same is not widely

/accepted.

accepted. There is only one manufacturer at Comilla. There is a need for a suitable power paddy thresher.

(i) Demand for pedal operated thresher will be around 5000 by 1975.

(ii) Demand for power paddy thresher will increase from 3000 by 1970 to 10,000 by 1975 if a suitable design is introduced.

G. Threshers - Wheat & Paddy

a) West Pakistan

The present wheat threshers manufactured in West Pakistan has 300 - 500 kg/hour capacity and are mostly used with 25 Hp electric motor or tractor belt pulley. There is room for improvement in design, efficiency and manufacturing techniques. It is felt that although combine harvesters may play an important role in future, there will be a greater demand for power wheat threshers for some years to come. The same threshers may be used to thresh 'indica' variety of paddy.

(i) The demand for power wheat thresher will go up from 5000 units by 1969-70 to around 20,000 by 1975.

(ii) The demand may further increase if a suitable paddy cum wheat thresher is introduced.

(iii) However demand will also depend upon the extent and magnitude for

H. Power, Reaper and Binders

a) West Pakistan

As the first step towards mechanization of harvesting, there is a necessity to introduce tractor mounted mowers, reapers and binders.

/Although

although ultimately self propelled combines may be widely used, these intermediate equipments are necessary for a class of farmers for years to come.

I. Combine Harvesters (primary for wheat)

a) West Pakistan

There has been much interest in combine harvesters for wheat by farmers with large size holdings. Government has allowed 350 pull type combines (Allis Chalmer) to be imported and has issued licences to all registered farm machinery dealers to import 5 combine harvesters - both self propelled and pull type - for usage, testing, demonstration and extension. It is felt that combine harvesters will play an important role in West Pakistan Agriculture. It may be necessary to import a large number of self propelled combines of different specifications, and formulate a program of introduction of combines of required types on a significant scale after the tests are completed. Adoptability of such machines for other winter crops and also for rice is to be explored further. The future trend in usage may be towards self propelled combines, mostly custom operated by farmer contractors. A combine which will combine both paddy and wheat is desirable.

b) East Pakistan

Import, testing and extension work with respect to small Japanese type pedestrial and riding Paddy Combine Harvester is desirable

J) Paddy Transplanters.

a) East & West Pakistan

Transplanting labour charges are going up in West Pakistan. For example a few years back, transplanting charges of paddy which used to be Rs. 12.50/hectares has gone to Rs. 35/hectare in 1968

/and

and may go up to Rs. 50/hectare in 1969. Hence there has been an interest in paddy transplanters. However no such machine is available in Pakistan. As paddy holdings are relatively of larger size, with increased area under double cropping, need to introduce Japanese type power transplanters on an experimental stage is necessary.

K. Rice Processing Equipment

a) West Pakistan

Rice drying, hulling and milling machines are not manufactured and there is a grow need for them taking into account the export-potential of high quality rice. It is proposed by the government to establish two plants, one in cooperative sector and the second one either by Agricultural Development Corporation or Industrial Development Corporation to produce dryers, hullers, etc.

b) East Pakistan

East Pakistan Agricultural Development Corporation will be importing 10 Engleburg integrated rice mill (Precleaning of paddy, hulling, polishing, asperator and grading) with a ½ ton capacity per hour with 20 Hp engine. The unit price without engine is $5900. It has also imported one automatic rice hullers (rubber roller, hulling, milling, parboiling, drying) with 1 ton/hour at a cost of $60,000/unit and also two Schule (German Make) Automatic Milling Machine (milling, parboiling and drying) for experimentations. It is also proposed to import 4 units ½ Franco Ferrie from Italy, 4 units from Japan. Two of

/the ADC

the ADC intend conducting experiments with about 20-25 units and decide on the suitability.

In general for Pakistan there is a great necessity to take a detailed analysis of Rice Processing on an integrated scale, and continue import, and testing of suitable rice mills of varying capacity, before any manufacturing program is evolved.

L. Other Implements (Tractor Drawn)

a) West Pakistan

The implements needed are tractor drawn

i) Ditchers for potato and sugar cane

ii) Rotorators for paddy

iii) Potato planters and harvesters

iv) 9-13 row 9" spacing seed drill cum fertilizer distributor

v) Row crop planters 3-5 row with fertilizer distributor.

Although at present cultivators, disc harrows, disc plows and mould board plows are made locally in limited quantities. The future demand is expected to go up as every tractor will have to basic tillage implements (actually disc plow, cultivator or disc harrow). There is also a great necessity for better designed and quality mould board and disc plows.

b) East Pakistan

There will be continued demand for disc plows, rotary tillers and offset disc harrows. As disc plow is used in winter season and during rainy season when the soil is sticky. As rotary tillers are not available, disc harrows are used. Future demand for rotary tiller will be high.

The summary of estimated demand and trend in design for farm equipment in Pakistan (1970-75) is given in Table 2.6

/ Table 2.6

Summary of the Estimated Demand and Trend in Design for Farm Equipment in Pakistan

		Specification	Demand in 1969-70	Demand in 1974-75	Remarks
1. Agricultural Tractors	West Pakistan	45-55 Hp	3000-4000	6000-7000	Demand during 1974-75 will greatly increase and higher horsepower range may be required in a higher percentage than that is at present.
		55-65 Hp	1000-1500	3000-4000	
	East Pakistan	30-45	500	1000-1250	Usage on wet land and winter crops with irrigation facilities is expected to increase.
2. Power tillers	WP	8-10 Hp	100	not known	The 520,000 number of rice holdings (medium size) with an average commanded area of 4.5 ha do need a power equipment. Necessary to import power tillers to conduct demonstration and extension.
	EP	6-8 Hp	1500	4000	There is a good potential for power tillers. Power tillers have gained acceptance.
3. Engines	WP	Powerine 1-2 Hp	5500	Total around 15,000 - 20,000	Demand will increase, primarily for the usage of plant protection. The demand in East Pakistan by may go higher up.
	EP	- " -	5500		
	WP	Powerine 3-5 Hp	1000	Total around 8,000 - 10,000	Primarily for light work. Demand will not significantly increase.
	EP	- " -	3000		
	WP	Diesel 3-15 Hp	15000	40-50,000	Primarily used for pumps, power tillers and other light work.
	EP	- " -	9000	15,000	

/WP

	WP	Diesel 12-30 Hp	4000	Total around 15,000-18,000	Used for pumps and other stationary work. Demand in West Pakistan will grow at a slower rate due to extension of rural electrification
	EP	- " -	Limited		
	WP	Diesel (for tractor) 30-75 Hp	5000	10,000	Demand estimates are primarily for tractors.
	EP	30-45 Hp	500	1200	
4. Pumps	WP	Hand pumps	1000	5000	Limited demand
	EP	- " -			
	WP	Centrifugal 3-15 Hp	15000	40,000 - 50,000	In East Pakistan, there is a necessity for paddy propeller pumps and low lift pumps. For 2"-6" centrifugal pumps demand in West and East Pakistan will increase.
	EP	- " -	5000	10,000 - 15,000	
	WP	Deep well 20 Hp & Above	12000	25,000 - 35,000	With increased land reclination projects, demand will go up
	EP	- " -	2000	5000	

5. Sprayers

/5. Sprayers

5.	Sprayers & Dusters	WP	Hand Sprayers	7,500	Total around 50,000	Demand will tend to increase
		EP	- " -	10,000		
		WP	Knapsack	5000	Total around 15000-20000	Demand in West Pakistan will tend towards tractor mounted sprayers.
		EP	- " -	5000		Demand in East Pakistan towards Boom sprayers and power tiller mounted sprayers.
6.	Threshers	WP	Pedal operated	limited	limited	Although demand may increase, trend will be towards power operated threshers.
		EP	- " -	1000	around 5000	
		WP	Power-Paddy	limited	around 5000	Demand for a larger capacity thresher will increase. In West Pakistan a combination of wheat and paddy threshers necessary
		EP	- " -	3000	10,000	
		WP	Power-Wheat	5000	15-20,000	Although demand will increase, in West Pakistan, trend will be towards combine harvesters.
		EP	- " -	limited	around 1000	
7.	Mowers, reapers and binders	WP	Tractor operated	-	-	There is a need to introduce the same
8.	Combine harvester	WP	Wheat	-	-	Combine harvesters have been just introduced. The future demand may be towards self propelled combines.
		WP & EP	Rice	-	-	For West Pakistan, a combine harvester for both wheat and rice is necessary. In East Pakistan testing and extension work on small rice combines may be desirable.

/9.

9	Paddy Transplanter	WP & EP	Japanese Type walking or riding (power operated)	-	-	It is desirable to introduce on a modest scale for testing and demonstration purposes.
10	Rice Processing Equipment	WP & EP	Medium & Large rice mills, dryers, etc.	-	-	A detailed analysis of rice processing is necessary. Import testing should continue on a more intensive scale. It is necessary to establish the capacity, and processing technique
11	Other Implements (Tractor Drawn)	WP	Rotorators, seed drills, planters etc. disc plow, M.B. plow other tillage implements	-	%	The demand is expected to go up. Necessary to examine the production potential and evaluate detailed manufacturing plans.
		EP	Disc harrows, disc plow, rotorators			Demand for all these implements will go up.

/SECTION III

SECTION III

Manufacturing Industries and Ancillary Facilities

1. Farm Machinery Manufactures

A. Existing Industries

(i) Tractors

(a) West Pakistan

Government is actively considering whether manufacturing program of tractors should go without any guidance or should they have any standardization of makes and models. For the present there is only one manufacturing unit - Adamji Deutz (Pakistan) Ltd., Karachi - with a licensed capacity of 1500 units/year, which is producing about 400-500 units per year only. The factory is reported to be working irregularly due to lack of raw materials and components. Considering the necessity of competition, existing and future demand, government has now licensed four firms as follows, with an initial capacity of 500 units each

a) Shahah Nawaz & Co: International Harvester

b) Gandhara Industries: Fiat (Arusha & Co)

c) Ali Autos: Fordson

d) Rana Tractors: Massey Ferguson

The aggregrate capacity of the plants will be 8000 tractors/year when in full production by 1971-72. Installed capacity will be 10,000 tractors/year. Rana Tractors & Equipment Ltd. has started the assembly operations. In 1968, 1200 tractors were assembled under phase I program.

(b) East Pakistan

No manufacturing program exists

/(ii)

(ii) Power Tillers

No manufacturing plants exists although two firms have been recently licensed.

(iii) Diesel Engines

(a) West Pakistan

There are about 30 manufacturers of diesel engines. There are three major manufacturers making slow speed diesel engines upto 100 Hp and high speed diesel engines upto 30 Hp. These are mostly copies of 'Rustow' engines and are manufactured without any technical collaboration, except for Ittelbaq who has a lecence.

The present production capacity of actual production are as follows:

		Production 1968	Capacity
a) Mohammad Hussain & Sons	Slow speed 10-100 Hp	1000	2000
b) Ittebaq Foundries and Workshop Ltd.	Slow speed 15-20 Hp	3600	6000
	High speed 20-[illegible] Hp	400	
c) Batala Engineering Company	High speed / Slow speed	4000	6000
	Total	9000	14,000

The details of the above 3 major units visited is given in Appendix III A.

Details of all diesel engine manufacturers is given in Appendix III B.

(b) East Pakistan

(i) Deutz Pakistan Co.

The East Pakistan Industrial Development Corporation has started Deutz Pakistan Diesel Engine Plant. It is currently assembling diesel engines.

/The plant

The plant when completed will be producing 3000 units/year to be increased to 4500 units/year. It will produce 2400 single cylinder engines for 1 cfs pumps and 600 twin cylinder engines for 2 cfs pumps. For the present the production is under capacity.

(ii) Rustow Engine Plant

The import contract of Rustow engines by Agricultural Development Corporation includes a provision to manufacture Rustow Engines in East Pakistan. It is expected that by 1972, this plant may produce 3000 engines/year.

(iv) Pumps

At present two types of pumps (i) Centrifuga l pumps, (ii) Deep well Turbine Pumps are manufactured in Pakistan. However, the actual quantities produced during the last ten years are not available. Their annual production capacity has been mentioned below.

(a) West Pakistan

Name of the units	Product	Annual Production
1. M/s. Batala Engg Co, Pakistan, Ltd. Lahore	Centrifugal pumps deep well turbine pump.	1400 Nos
2. 2. M/s. K.S.E. Pumps, Co, Ltd, Lahore.	-do-	1000 Nos
3. Ittebaq Foundries and Workshop Ltd. Lahore	Centrifugal	6000 Nos.
4. Mohammad Hussain & Sons, Lahore	Centrifugal	1000 Nos.

/(b)

(b) East Pakistan

1.	KSB Pump & Co. Ltd	Centrifugal pumps	300 per month
	Tongi Industrial	deep well	100 per month
	Area, Dacca		

These pumps are coupled with diesel electric motors and diesel engines. Particulars of a few of the electric motors and diesel engine manufacturers having a sizeable capacity are given in Appendix III-C

(v) Power Wheat Threshers

(a) West Pakistan

There are eleven units engaged in the manufacture of stationery wheat threshers. The total capacity claimed by them is 7022 per annum. However, the capacity recognised by Government is 3745 Nos per annum, as given below:

1.	M/s. Mohd. Hussain and Sons Lahore.	300 Nos.
2.	M/s. Ittefaq Foundary and Workshop Ltd., Lahore	500 "
3.	M/s. Anwar and Co. Lyallpur	200 "
4.	M/s. Danishmaind and Co. Lyallpur	35 "
5.	M/s. Caravan Engineering Works (Regd) Okara.	300 "
6.	M/s. Chazi & Co. S.T. Road, Main Channun, District Multan.	360 "
7.	M/s. Cooperative Karkhana Aleat-i-Zaryee, Bahawalpur.	300 "
8.	M/s. Ali Industries Ltd., Hyederabad.	258 "
9.	M/s. GTMC. Ltd. Isakhed	300 "
10.	M/s. Northern Industries Ltd., Peshawar Road, Rawalpindi.	1200 "

(vi) Sprayers and Dusters

(a) West Pakistan:

Hand sprayers (Hudson Type 3 gallons 80-100 PSI) is made by Jaffar Ibbarahim and Company.

/(b)

(b) East Pakistan

Hand sprayers (Hari Matsu Type 2½ gallon, 70 PSI) are made by drums Metal Works Ltd. at Sidhrigang industrial area. As the Agricultural Development Corporation has standardized "Hudson Type", the company will start manufacture the same after a few months.

(vii) Trailers

Trailers are simple items and are manufactured by Engineering Workshops in the country. Some of the important units are named here under:

1) M/s Omar Sons Ltd., Baitul Aman, Mymensingh Road, Dacca, East Pakistan (see Appendix III-C)

2) M/s. Yakoub Industries Ltd., Karachi, West Pakistan.

(viii) Tractor Drawn Implements

(a) West Pakistan

There is only one recognised unit (i.e. M/s. G.T.M.C. at Rahim Yar Khan (in the large/medium sector) for the manufacture of tractor drawn implements, with the following capacity per annum.

a) Cultivators with different No of Tines.	4550 Nos.
b) Disc-ploughs, 3-discs	1500 Nos.
c) Disc-harrow upto 16-discs	2000 Nos.
d) Board Disc- 4 discs	1950 Nos.
e) Mould Board Plough-3	1700 Nos.
f) Rear mounted blade	2000 Nos.
g) Cotton Planter .	1850 Nos.
h) Grain drill	1500 Nos.
i) Gyramor, Thresher Rotavators.	3700 Nos.

/In small

In small sector there are about one hundred and fifty firms manufacturing various types of agricultural implements.

East Pakistan

The popular mould board type plows are standard plow, light steel mould board plow. Many small implements are made by firms detailed in Appendix III-E.

(vii) Bullock drawn Implement & Hand Tools

(a) West Pakistan

Most of the bullock drawn plows are manufactured by village level small workshops. The soil inverting plows such as Sialkoti plow, Pakistan plow-A, Meetow plow.

2. Other Engineering Industries

(a) West Pakistan

West Pakistan Industrial Development Corporation

This has been started by Government of West Pakistan. The objectives are to set up and run public enterprises in the manufacturing sector.

The Karachi Shipyard & Engineering Works (Ltd.), (Karachi), Pakistan Machine Tools Factory Ltd. (Karachi) Mechanical Complex (Taxila), Forge plant (Taxila), are some of the major public enterprises. Details of the first tow factories are given in appendix III-G.

(i) Karachi Shipyard and Engineering Works Ltd, Karachi

This factory has been developed and is being expanded mainly for marine vessels and crafts. It has a foundary for Cast Iron with a 15 tons capacity per day and Cast Steel (10 tons per day) Non-Ferrous (0.5 tons per day). The surplus, un-utilised capacity in casting and machining will be available for the manufacture of Agricultural Machinery.

(ii) Pakistan Machine Tool Factory

This factory is under construction and is being set up with a total capital investment Rs. 116 million for the basic manufacture of machine tools. But the factory will have surplus capacity for Die Casting, Gear Cutting, forging , Heat treatment and machining. This surplus capacity may be utilised for the manufacture of certain tractor parts.

(iii) Heavy Mechanical Complex

Another factory with the above name is being set up (capital investment Rs. 122 million) at Taxila for the manufacture of capital machinery like, Mobile crane, Bull Dozers, Road Rollers etc, but the casting and machining facilities available at the complex will also be available for casting and machining the tractor castings, Engine Blocks etc.

(iv) Heavy Foundary and Forge

Another project with the above name has been planned for establishing at Taxila with the main object to feed the Heavy Mechanical and Heavy Electrical complex also being set up a Taxila.

East Pakistan Industrial Development Corporation

(i) M/s, Machine Tool Factory in East Pakistan

This factory is also being developed with a capital investment of Rs. 180 million and will have facilities for forging and die Casting in addition to their normal manufacturing programme.

(ii) EPIDC's Diesel Plant

A plant for the manufacture of 3,000 number per annum vertical high speed diesel engines is being set up with an investment of Rs. 19.6

/million.

million. In the initial stage it envisage manufacture of 6 HP to 18 HP diesel engines for agricultural purposes, while the next phase expansion programme includes manufacture of Marine Diesel Engines of Higher range upto 200 HP.

Other Industries in East Pakistan

Engineering manufacturing facilities are limited. Details of plants visited in East Pakistan is given in Appendix III-H

3. Ancillary Industires and Raw Material

A) Ancillary Industry

(a) Piston Components

i) M/s Allwin Engineering Co. (West Pakistan)

This factory is situated in one of the Industrial Areas in Karachi. They started about twenty years ago, with the manufacture of Pistons, Piston rings and Gudgeon Pins. By now, they added, radiator manufacturing plant and leaf springs. Recently the Industrial Development Bank of Pakistan has sanctioned Foreign Currency (Rs. 0.5 million) and local currency (0.5 million) l on to modernise and expand their activities. After expansion their production will be increased as shown in the following table:

Pistons	60,000 Nos.
Pistons Rings	4,00,000 Nos.
Pistons Pins	60,000 Nos.
Cylinder Liners/sleavers	60,000 Nos.

ii) M/s. M. Jan and Company, Chittagong (East Pakistan)

This factory is situated in one of the industrial area at Chittagong. They are manufacturing Pistons, Pumps, Laminated Springs etc.

/b)

b) Starting Batteries:

At present there are several units for the manufacture of accumulator batteries.

Some of them are as under:

a) Exside Battery fo Pakistan Ltd, Karachi

Capacity 41,00 Nos. per annum.

b) Pakrid Storage Batteries Manufacturing Co, Karachi.

Capacity 30,000 per annum. Installed 35,000 tons per annum.

c) G.C. Good Wills Co, Ltd, Lahore.

Capacity 21,000 Nos per annum.

d) Haq Batteries, Chittagong.

Capacity 30,000 Nos.

e) M/s. National Rubber and Tyre Co, Ltd.

Capacity 15,000 Nos. per annum.

f) M/s. Lucas Service Pakistan Ltd.

Capacity 12,000 Nos.

c) Radiators.

i) M/s. Allwin Engineering Industries Ltd, Karachi

ii) M/s. Kandawalla Industries Ltd, Karachi

iii) M/s. Ghandhara Industries Ltd. Karachi

d) Pulleys, Pistons Rings.

M/s. Allwing Engineering Industries Ltd, Karachi.

e) Wheel Rims

M/s. S. Ibrahim and Company, Karachi

f) Fly Wheel.

M/s Singer Sewing Machine Co, Karachi

/g)

g) Valve Guides, Tappets. Push Rod and Propeller Shaft.

M/s. Zulshan Engineering Works, Lahore.

h) Rubber Hoses:

M/s. Asian Rubber Works, Karachi

M/s. Master Rubber and Tyre and Co, Ltd, Karachi

M/s. National Tyre and Rubber Co, Ltd, Karachi

i) Clutch Housing

M/s. Karachi Shipyard and Engineering Works, Karachi

M/s. Steel Casting Lahore

M/s. Central Mechanical Engineering Works, Karachi

M/s. Qadri Industries Works, Karachi

j) Other Parts.

Clutch Pedals, Brake Pedals, Control Rod, lever and knob by

M/s. Yusuf Industries Site, Karachi.

Lamp Lenses and Head Lamp by M/s. Sulaman and Co, Ltd, Lahore.

It should however be mentioned that most of the above industries mentioned might have been licenced, but actual production have not started. It also appears that most of the above require further technical assistance especially in manufacturing techniques and quality control. However these are of a few potential ancillary equipment manufactured in Pakistan.

B) Supporting Industries

There are many foundries and machine shops who are manufacturing castings, forgings and other components on a limited scale. Details are given in Appendix III-I

C) Raw Material

/Steel

Steel

All steel is to be imported. There are a few rerolling mills. The Pakistan steel mills corporation is negotiating with USSR for establishing a steel plant at Kalabagh, West Pakistan.

Sufficient Iron ore of workable Fe. content is now available in West Pakistan but for lack of funds and technical know-how, its prospecting could not be started. Sufficient quantity fo ore was sent to Germany for trial smelting and the results are reported to be encouraging. Pakistan Steel Mills Corporation has recently been set up for prospecting the ore, and setting up Steel Mills with an annual capacity of 0.5 million tons at Kalabagh. The Corporation will also set up another Mill at Karachi base on imported ore with an annual capacity of 5.5 lacs tons.

The present demand of the country is met by importing billets and scrap billets are rolled into differnet sizes of rounds, tees, and the imported scrap is smelted at Chittagong Steel Mill Ltd (present capacity 1.5 lac tons per annum which is being expanded to 2.5 lac tons) and rooled into plates, sheets and other heavier sections. There are also a few electric furnaces which smelt scrap and alloy them to the required chemical content. Some of the electric furnaces are as under:

1. The Karachi Shipyard and Engineering Works, Karachi Capacity 25 tons per day.
2. M/s. Batala Engineering Co, Ltd, Lahore,
   Capactiy 10 tons per charge, four charges a day 18,000 tons per annum.
3. M/s. Mohammadi Iron and Steel Works, Ltd, Chittagong
   Capacity 12000 tons/year (Capacity of the electric furnaces is 6 tonss/charge).

/4.

4. Castairs and Cummings Ltd, Karachi

   Capacity ½ tons

5. West Pakistan Railway Workshop, Lahore.

   Capacity: 215 tons.

6. M/s. Steel Castings Ltd, Gujrangwalla.

   Capacity ½ ton High Frequency Furnace 3000 tons per annum.

7. M/s. Karimi Industries, Nowshera.

   Capacity 1080 tons per annum (2 furnaces electric ARC 3½ tons)

8. M/s. Ittefaq Foundry.

   Capacity sanctioned = 9000 tons. Installed = 15000 tons per annum.

   (5 tons each. Electric ARC furnace - 2½ hours per charge).

9. M/s. Kaisar Sartaj.

   One No. of electric ARC furnace of one ton capacity. 15000 tons per annum.

10. Ferrous Metal Industries, Badami Bagh, Lahore

    Oil Fired Rotary Furnace, Self made 7500 tons per annum.

11. M/s. Yazdani and Co, Sheikhupura Road, Lahore.

    Capacity 4085 tons per annum.

The following steel smelting furnaces are being set up for alloy steels.

1. M/s. Vallibhoy Kamaruddin (Sind) Ltd, Karachi
2. M/s. Pakistan Industrial Gases Ltd, Haro, Karachi

   Capacity 10,000 tons per annum

D) Machine Tools

Center lathes, piller drills, shaping machines and hacksaw are manufactured in West Pakistan. Ittefaq Foundries & Workshop Ltd., Lahore produces radial drills and lathes. The Batala Engineering Company (Pakistan) Ltd,

/Lahore

Lahore produces lathes, piller and bench drills, shaping machines and textile looms. The Tejgaon Eng. Co. Ltd. Decca produces jute mill machinery, match making machinery, lathes, drills, shapes and presses.

The Pakistan Machine Tools Factory which has started in 1968 will be producing turret lathes, and two types of milling machines.

4. Availability of Technical Personnel

Although there are engineering colleges in Pakistan, there appears to be a lack of technical personnel especially in the field of manufacture, industrial engineering, production engineering, metallurgical engineering, quality controls techniques, etc.

SECTION IV

Policy Towards Farm Mechanization

1. Incentives by the Government

a) Standardization of Farm Equipment

(i) West Pakistan

A. Imports

Upto recently Massey Ferguson, International Harvester, John Deere Lanz, Ford 4000, Deutz, Holder were on the "Standardized List" for imports and Zetor, Bylerus and Zudgugar could be imported on barter agreement. Recently Fiat tractors have been allowed to be imported.

B. Diesel Engine Manufacture

The government first had plans to introduce standardization of a diesel engine (Bedford) on all tractors and trucks licensed to be produced in Pakistan. The firm licenced to manufacture tractors were directed to investigate the possibility of usage of a standardized engine and produce a prototype within six month. However with the appointment of the "Tractor Committee", the problem is to be studied in detail by the Committee.

C. Tractor Committee - Farm Mavhinery Import & Manufacture

Government of Pakistan constituted a tractor committee in September 1968. The committee consists members from the Government, especially Agricultural Department and knowledgeable individuals in the field of farm machinery. The Committee has undertaken a detailed survey of the Est~~xxx~~

/West

West Pakistan agricultural sector through three experts pannels in the field of socio economic studies, analysis of manufacture, supply and prices of farm machinery and study of institutions connected with agricultural development. The three pannels are now touring West Pakistan. The Committee is also collecting information through (opinion surveys) conducted through questionnaires sent to farmers, governement agencies, economists and dea lers of farm machinery.

The Committee will recommend an overall plan for farm mechanization including demand, supply, manufacture, standardization, distribution, rural financing, sales and service, training and usage of farm machinery. The final report is expected to be ready by August 1969. The Committee will also undertake a survey in East Pakistan during the later part of this year.

(ii) East Pakistan

A standardization committee under the chairmanship of Secretary of Agriculture, Government of East Pakistan has been formulated to standardise tractors, power tillers, diesel engines, pupms and sprayers for imports as well local manufacture.

A. Tractors & Power Tillers

The Subcommittee for Standardization of Tractors & power tillers has been formulated under the chairmanship of the Dean of Faculty of Agricultural Engineering, Mymensing Agricultural University. Further action may be taken by constituting a "Tractor Committee" on the lines that is now investigating in West Pakistan. Regarding power tillers, a selection committee which was formed at earlier date selected yanmar, Iserai, Kubota, Satoh and Mitsubishi. The Subcommittee

/has

has now selected new models of Yanmar, Satoh, and Hinamoto. Kubota and a Bulgarian power tiller is under testing.

Regarding the tractor, only Usrus was tested and was not approved.

B. Engines, Pumps & Sprayers

The Subcommittee for standardization of Engines, Pumps and Sprayers has been constituted under the chairmanship of the Head of the Department of Mechanical Engineering, Engineering University, Decca. A test procedure to test the above items are under formulation.

C. Import of Power Tillers

Upto recently, out of 17 power tillers makes tested, 5 power tillers with diesel engines namely Yanmar, Kubota, Iseki, Satoh and Mitsibishi were on the "Standardized List" for imports. Agricultural Development Corporation first imported forty units of the first four makes to further evaluate their suitability. As a second step import licences were granted to the private sector to import 400 each of the above 5 makes. Thus by 1968, total population of power tillers in East Pakistan was around 2500.

B) Manufacture in Small Industries Sector

(i) East Pakistan Small Industries Corporation

One of the activities of EPSIC is to develop farm machinery manufacture in the small scale sector. In November 1967, a team from Japan consulting Institute (JeI) visited East Pakistan at the invitation of EPSIC and after a detailed study recommended the following in the field of tines for power tillers, weeders, sprayers, tea knife, spade and plough.

/(a)

(a) Tines for power tiller: To build a power tiller tine making plant at Chandpur Industrial Estate for rolling system at a cost of Rs. 572,000 to produce 78,000 pieces in 1st year, 90,000 in 2nd year and 150,000 in 3rd year.

(b) Hand weeder: To expand the capacity of Chandpur hand tool factory at a cost of Rs. 187,000 to produce 2000 units in first year, 5000 units in 2nd year and 10,000 units in 3rd year.

(c) Hand sprayers: Hudson type hand sprayers are widely used, and introduction of JIS - type hand sprayers will take a long time. Market price of Hudson type sprayer is 175 where as other type is 70% higher. As the minimum economical capacity of hand sprayer plant is 20,000 units a year, considering the average demand of 5000 units/year from the past 3 years, the JCI recommended importing Hudson type sprayers, from West Pakistan either fully built up or parts only and assemble in East Pakistan with a percentage of local content. Where annual demand reaches 25,000 units/year, it has been recommended to reinforce the existing idle capacity or build a new plant to manufacture hand and power sprayers and dusters.

(C) Policy towards manufacture and usage of farm equipment

The ultimate aim of the Governmentof Pakistan is to d evelop sufficient manufacturing capacity, subject to feasibility. To fulfill this objective the government of Pakistan, has allocated funds as per the following table for the development of such industries in private sector during the third plan (1965-70) of the Industrial Investment.

Out of the total allocation 5200 million rupees, 867 million rupees (467 million in public sector and 400 million rupees in private sector) has

/been

been allocated for development of agriculture. This figure works out to 15% of the total expenditure:

Table 4.1

Allocation of Funds for Farm Machinery Manufacturing Sector

(1965 - 70)

S.No.	Brief description of the industry	Amount of investment (Rs. million)	Capital allocated (Rs. million)
1.	Agricultural tools and implements.	400	147
2.	Diesel and other internal combustion, engines	514	318
3.	Agricultural machinery and equipment	360	210
4.	Tractors and components	315	190
5.	Pump and parts	344	211
6.	Trailers, trolleys, bus bodies	140	76
7.	Service Workshops	529	270
	Total	2,602	1,422

The general policy of the Government regarding the general engineering industries are that it is to be versatile enough to be adopted for the manufacture of any item in the allied field including items for the use of farm machinery manufacture.

Out of the total provisions earmarked for the investment during the Third Plan Period (1965-70) the Government of Pakistan has recnetly approved a Priority List of Industries. Extract from this Priority List of Inudstries is given in Appendix IV-A, for establishment of industries connected with the manufacture of agricultural machinery and implements, for investment during

/the remaining

the remaining period of the Third Plan (i.e. by 1970).

(D) Import Duties

There are no import duties on tractors and general implements. However imports xxxx of new items is subjected to alleviate of foreign exchange. Government of West Pakistan - directorate of industries - is also considering relief on import duty on raw material for farm equipment manufacture.

(E) Subsidies

a) 25% to 50% government subsidy for land development work of undelating and submarginal areas.

b) 25% subsidy on tractor hiring from Government tractor stations for land clearance work (subsidy used to be 50% before)

c) Subsidy of Rs. 2500/- for installing tube well in non rain fed areas and Rs. 1500 in semi irrigate areas. The cost of tube well normally is between Rs. 10,000 - Rs. 15000.

d) Subsidy in b..... of tube wells. Rs. 1.50 charged for first 100 feet of well per foot.

e) In areas where tube well is used to supplement canal water, 25% concession on water rate for first five years is provided.

f) The present rate of high speed diesel oil is Rs. 2.40 and Gasoline Rs. 4.00 per imperial gallow. The subsidy of Rs. 0.20/gallow on diesel oil was discontinued on 1 July 1968. The question of rationalization of subsidy on oil and fuels is being studied by the government

g) No subsidy on purchase of tractors is granted. Loans are available through Agricultural Banks.

/h)

h) 35% subsidy in West Pakistan and 50% subsidy in East Pakistan for Fertilizers. (Two years back subsidy in West Pakistan was 50%)

i) 100% subsidy for cereal plant protection operations both in East and West Pakistan. Government is considering supply of hand sprayers on subsidised price

j) Incentives on usage of low lift pumps. Pumps supplied on hire charges by Agricultural Development Corporation at Rs. 75/hectare/sector

k) The Government has opened centres for purchase and marketing of farm products at reasonable rates. The prices however are fixed by Government on year to year basis. At present, the price of wheat has been fixed by Government @ Rs. 17/- per mound ~~mut~~ (i.e. 82 lbs. approx), Rs. 38/- per mound for fine variety rice and Rs. 20/- per mound for medium quality and Rs. 18/- per mound for coarse grade rice.

F) Spare Parts Supply

Considering the import of many makes of tractors from the past 15 years, it is felt that the availability of spare parts is not adequate. Considering the tractors imported from the past few years, only 20% of foreign exchange is allocated at the time of import of each tractor, it is felt that as this does not take into account the overall population of tractors, there may be accurate shortage of spare parts in the near future.

/2. Rural Development

2. Rural Development

A) Land Reclamation

a) West Pakistan

The unclutivated land of 13.7 million hectares has not been brought under cultivation as yet, as the operations required for its development are beyond the resources of proprietors. Most of these lands need Bull Dozing and additional supplies of irrigation water, which are beyond the capacity on individual farmers. The Government of West Pakistan has launched a scheme during the 3RD FIVE YEAR PLAN (1965-70) with the total cost of Rs. 230 million under the name of "Development of land and provision of machinery for Augmenting water supplies in West Pakistan". On completion of this scheme it is expected that the following major physical targets will be achieved.

i)	Levelling	4,85,000 hectares
ii)	Ploughing/Harrowing.	136,500 hectares
iii)	Tube Wells	16,047 Nos.

The following are the details of use of machinery by the Public Sector agencies.

Table 4.2

		1959-60	60-61	61-62	62-63	63-64	64-65
Tractors used	Number	124	132	125	123	108	114
Bull Dozers used		132	223	235	237	243	290
Area Cultivated	Thousand hectares	20.4	21.2	14.8	15.4	14.8	14.0
Area Developed	- " -	14.8	24.3	25.8	26.0	28.8	28.4

In 1966, 440 bull..... (Fiat 70 Hp) have been supplied for the same.

/b)

b) East Pakistan

Similar project is under consideration in East Pakistan. Details will be available as and when approved. As regards the utilisation of machinery ~~fmk~~ by public sector agencies following table gives details.

Item	Unit	59-60	60-61	61-62	62-63	63-64	64-65
Tractor Used	Number	66	93	125	156	146	133
Pump used	-	1150	1367	1555	2024	2477	2238
Area reclaimed	Thousand hectares	2.8	4.4	3.2	8.4	7.2	9.2
Area irrigated	-	18.8	24.8	29.4	53.0	63.0	52.5

B) Water Management of Land Development Agencies

The Irrigation Department, Water and Power Development Authority (WAPDA) and the Land and Water Development Board(L&WDB) are the twice major organizations An organization under WAPDA and L&WDB has been created to execute desalinification and dewaterlogging programs in West Pakistan. The area known as SCARP-1 is the first area around 0.4 million hectares to be used for removal of water-logging and salinity and intensive agricutlrual development of tubewells, soil testing and reclamation laboratory analysis and training of farmers in pump operation in SCARP area has been successfully undertaken.

Due to integrated program of land development, substantial areas as shown in table is expected to be improved or reclaimed during the third plan.

/Table 4.5

Table 4.5

Estimated Land Development Area as a Result of
Water Management Projects in III Plan
(Million Hectares)

	East Pakistan	West Pakistan	Total
a) Cropped area at the end of 1st plan	10.64	13.65	24.29
b) Additions to cropped area by the end of 2nd plan	0.16	0.56	0.72
c) Additions to cropped area during the 3rd plan (1970)	0.84	1.48[x]	2.32
Total cropped area expected by the end of 3rd plan (1970)	11.64	15.69	27.33
Existing area estimated to be improved during the 2nd plan	0.96	2.32	3.28
Existing area likely to be improved during the 3rd plan	1.08	3.31[#]	4.39

x Excluding area to be out of commission due to spread of salinity and waterlogging.

Cultivated area commanded by irrigation and drainage schemes will be about 1.05 million ha. However area benefited during IIIrd plan will be 3.31 million ha.

C) Usage of Pumps

a) West Pakistan

The waterlogged and saline areas which was 0.88 million ha in 1948 has increased to 1.2 million ha in 1958.

With program for desalinification of lands and dewaterlogging, usage of deep well pumps will play an important role. The demand for electric motor operated pumps will be more. Also about 26.6 million hectares decimeter of

/increased

increased water supplies are to be made available for irrigation, out of which 24.2 million hectares decimeter ground water and 2.4 million hectares decimile from increase surface water. Some 40,000 private tubewell are expected to produce 7.3 million hectare decimeter for 2 million hectares. This development strategy is said to be consistent with the recommendations prepared by the "White House Interior Panel on Salinity and Waterlogging" of West Pakistan. However it is reported that 25 year Program of Project suggested by the Panel is compressed to 10 year period by the Third Plan. It is reported that Agricultural Development Corporation will take major responsibility for projects undertakings in Sindh C... Private tubewells will develop irrigation water resources in the area of Indus plain especially in Bahawalpur area where the ground water is now saline.

Program for tube well installation by the Department of Agriculture is as follows

	I Plan	2nd Plan	3rd Plan Target
No. of tube wells	1,600	5,750	15,000

It is also expected that the number of tubewells being installed by the private firms will also go up considerably during the next 5 years.

Taking into above factors into consideration total annual demand for deep well pumps during the next 5 years is expected to be 5000-6000/year.

b) East Pakistan

East Pakistan Agricultural Development Corporation has a target to install 12,000 low lift pumps to irrigate 30,000 hectares. It has been commented by experts who have done a detailed study that "this level of imput fails to recognise the potential growth of irrigation through private

/distribution

distribution and sale to farmers of small pumps". It is felt that "with greater encouragement to private enterprise, the target area to be served by the low lift pumps during the 3rd plan could be at least doubled or perhaps tripled". The IDA (World Bank) is also strongly recommending use of small low lift pumps and has extended a loan of $2.7 million for such pumps or similar equipment.

It is expected that "using the equivalent of present sizes of pumps, approximately 6600 pumps (including 10% stand by) would be required to irrigate 0.4 million hectares. In addition, by 1985, the Ganges Kobadak, the old Brahmaputra and Sylhet Haor area projects should bring another 1-1.5 million hectares under cultivation during the dry season".

D) Selected Inputs Usage

Usage of fertilizer, plant protection chemicals and improved seeds has increased from the past few years, although there is scope for great improvement, as shown in the following table 4.6

Table 4.6

Recent and Projected Level of Selected Agricultural Inputs

	Fertilizer (N/P/K) (000 tons)	Plant Protection (Million ha)	Improved Seeds (000 tons)
1959-60	31	1.6	33
1964-65	132	3.56	40
Projected			
1970	484	10.4	150
1975	668	16.0	300

/(1)

(i) Fertilizer

Fertilizer usage which was 60,000 tons in 1960 has gone up by four folds at the present and in expected to reach over 2 million tons by 1971-72.

The 3rd plan target is to triple the use of fertilizer from the level of 162,000 tons of nutrients in 1964-65 to about 484,000 tons by 1970, and may go up to 700,000 tons by 1972. The present and proposed capacity of Pakistan fertilizer plants in 3rd plan targets (1969-70) are as follows:

Table 4.7

	Existing Plants	Plants Proposed	Capacity Present	Capacity proposed
West Pakistan		5	74.9	861.7
East Pakistan		4	52.7	542.3
Total	4	9	127.6	1404.0

If the above plants are in full operation by 1969-70, the nutrient requirement for 484,000 tons by 1970 can be met. The total cost of 9 plants is expected to be $215 million of which 71% is in foreign exchange. However the projected capacity of plants is not expected to meet the fertilizer requirements beyond 1972.

(ii) Plant Protection Items

A few years back, supply of plant protection chemicals and the equipment used to be free by the government. From the past two years, 25% of nominal charge is recovered by the farmer. Two types, "Solo type" - knapsack with engine (imported) and JICO type - trolley mounted sprayer with engine (imported) are manufactured with 40% local content. There are no plans at

/present

present to manufacture small gasoline engines.

Plans for two plants, one in West Pakistan and one in East Pakistan are under consideration. The one in West Pakistan is being set up.

Area covered by plant protection operations 1960-65 and targets for 1970 are given below.

Table 4.8

	East Pakistan	West Pakistan	Total
	(million hectares)		
Curative measures			
1959-60	0.16	0.56	0.72
1964-65	1.28	1.28	3.56
1969-70	2.40	2.40	4.80
Preventive measures (seed treatment)			
1959-60	Neg.	0.92	0.92
1964-65	0.12	1.2	1.32
1969-70	2.20	3.4	5.60

Tha plant protection chemicals are to be imported. The study by an expert team suggests that "by 1970 plant protection should be extended to 12 million hectares and by 1985 to 24 million hectares".

(iii) Improved Seeds

The Agricultural Development Corporation is engaged in improving the management of foundation seed farms, opening new ones and is embarking on a program with multiplication with private farmers. The Third plan target for the percentage of crop areas to receive improved seeds are as follows.

/Table 4.9

Table 4.9

	West Pakistan	East Pakistan
Rice	50	25%
Wheat	55	50
Maize	20	50
Pulses	40	30
Cotton	70	-
Jute	-	70
Sugarcane	5	10
Rape & Mustard	20	30

C) Rural credit & other services

"Pakistan's annual agricultural credit needs are approximately 15% of the annual gross value of agricultural output". Against the annual requirement of about Rs. 1600 million, during 1947 to 1960, agricultural sector received only Rs. 230 million per year from institutional credit sources of which about 5.6% was from government, 9.6% by primary cooperative societies, 80% from cooperative banks to individuals 4.3% from Agricultural Development Bank of Pakistan.

(a) The Agricultural Development Bank of Pakistan

The Agricultural Development Bank of Pakistan, established in 1961 by merging the former Agricultural Development Finance Corporation (established in 1952) and the Agricultural Bank of Pakistan (established in 1957) provides credit facilities to agriculturists.

The Bank provides different kinds of credit facilities to agriculturistss. Besides individuals, public and private limited companies engaged in agriculture of the development of agriculture are eligible for loans. Short-term loans

/ repayable

repayable within eighteen months are generally given for seasonal requirements, such as seeds, fertilizers, plant protection measures and hired labour charges. Medium-term loans, for periods exceeding eighteen months but not exceeding, five years can be obtained for such items as small agricultural implements, levelling of land, digging of surface wells and purchase of draught animals. Long-term loans, for periods of over five years, are advanced for major improvements in land and the adoption of modern methods, e.g. installation of tube-wells, purchase of tractors and raising of orchards. To avoid misuse loans are given in kinds as far as practicable. It grants loan not exceeding Rs. 1000 to an individual farmer on personal and property security and to a landless labourer a loan of Rs. 500 on personal security again hypothecation of crops. There were 120 branches by the end of 2nd plan. In 1965, International Development Association granted a $27 million credit to the ADBP for lending activities, especially medium and long term loans for tube wells and farm machinery on 3 year payback period basis. Table 4.10 gives details of loans sanctioned upto June 1968.

Table 4.10

Total Distribution of Farm Machineries against Loan Considered by Agricultural Development Bank of Pakistan in East Pakistan
(Position upto 30.6.1968)

Units in Number	Sanctioned	Pending Sanction	Supplied
Tractors	301	106	143
Power Tillers	1712	142	1227
Fractional Power Pumps	2449	298	896
Pumps 2 cfs	312	18	107

It has been informed that after June 1968, apart from clearing items 'pending sanction', a large number of units have also been sanctioned.

/(b)

(b) Taccavi Loans

These loans are administrated directly by the Provincial Governments through revenue or agricultural officers. Loans are granted on the s trength of documents establishing the applicants tillers of ownership assessing the value of land. In Ist plan Rs. 91 million, and in 2nd plan Rs. 116 million were contributed and in 3rd plan an estimated Rs. 121 million is earmarked by the government towards these loans.

(c) Cooperative Credit Societies

In 1963-64 total number of societies dealing in credit was 14,000 in West Pakistan and 4500 in East Pakistan covering 8% of the rural families. Th interest rate charged by the cooperatives to farmer is 6-9% and rate paid by cooperatives to central financing agency is 4 1/4 - 6%

3. Research, Testing & Educational Institutions

(a) Agricultural Research

a) Agricultural Research Council

b) Pakistan Central Cotton Committee

c) Pakistan Central Jute Committee

d) Agricultural Department

The major research in the field of farm equipment in Pakistan is primarily with the government Agricultural Departments. These are base workshops at Peshawar, D.I. Khaw, Lyallpur, Khanpur, Khairpur, Tandojam in West Pakistan and at Quetta in East Pakistan. Besides other functions, the workshops have a Research Section, headed by an agricultural engineer whose sole responsibility is to carry out trials and evolve new designs.

/(ii)

(ii) Design and Testing

(a) West Pakistan

The Department of Agriculture at Lyllapur have designed an improved Power wheat thresher. The original model with 120 kg/hour was improved to produce about 500 kg-700 kg/hour and the new design was released for manufacture. Many private manufacturers have taken up manufacture of the same. The Department of Agriculture is also conducting comparative performance studies of many imported threshers. The West Pakistan is divided into three agricultural zones, North (D.I. Khan, Peshawar, Amb, Swat, Dir, Kalam and Chitral units), Central (Rawalpindi, Sargodha, Lahore, Bahawalpur and Multan units) and South (Khairpur, Karachi, Hyderabad, and Kalat and Quetta units). Each zone has a divisional agricultural machinery workshop. The divisional agricultural office is engaged in installation of tubewells, repair and maintenance of departmental tractor fleet, land reclamation, research and extension. There are implement testing units in two places and one will be started at Peshawar soon

(b) East Pakistan

1. The Agricultural Engineering Research Division is conducting experiments, design and development in the field of animal drawn implements, pumps, rice drier. The "Chasi iron bullock drawn mould board plow" with cast iron frog and share weighing lo... has proved to be popular. The rice dryer developed has 2 Hp motor with smokeless furnace with capacity of 100-150 kg/hr.
2. The Comilla Experimental Station has both design and development units and also testing facilities in usage for power tillers and other agricultural machinery.

/(iii)

(iii) Agricultural Education

The following facilities are available

a) West Pakistan

University: (a) Agricultural University Lyllpur (Agriculture and Agri. Eng)

Agricultural College (a) Tandojam

(b) Peshawar

b) East Pakistan

University (a) Agricultural University - Mymensingh (Agriculture - and Agri. Eng)

Agrl. College(a) Agricultural College - Decca (Tajgeon)

There are agricultural high schools at Sherpur and Tajhat

(iv) Training and Extension Services

a) West Pakistan

Apart from the training fadilities that exists with private farm equipment dealer (notably with M/s Rana Tractors, Batala Engineering Company) Government is operating two schools, one at Lyallpur and other at Tandojam. A six month training program in farm equipment operation and maintenance is given for a group of 50 trainees at the rate of 200 trainees per year. An allowance of Rs. 50 is given to the trainees.

b) East Pakistan

The Farm Mechanization Training Institute at Decca imports training in maintenance and operation of farm equipment. The Central Workshop at Decca under the supervision of East Pakistan Agricultural Development Corporation imports training to farmers in pump operation

/and

and maintenance. The Agricultural Engineering Workshop at Decca has training program in workshop practices. At Mymensingh, the Krishikal Training Institute, a private organization offers training in the usage of power tiller, to any farmers who owns one of their machines.

(c) Plant Protection Institute, Lylapur

Plans for an integrated plant protection institute to be set up at Lylapur has been submitted to the Asian Development Bank for financial and technical assistance. The institute is to operate for the needs of the whole region, including that of neighbouring countries.

(d) Extension Services

There are a fairly well organised extension service operating in Pakistan.

/SECTION V

SECTION V

POLICY TOWARDS INDUSTRIALIZATION

1. General Trend of Economy

The Second major single item contributing to Pakista n national economy is manufacturing. The percentage share has greatly increased from the past few years as shown in Table 5.1

Table 5.1

Percentage Share of Major Sector in the G.N.P.

Sector	1949-50	1964-65
Agriculture	50.0	48.2
Manufacturing	5.8	11.5
Construction	1.0	4.7
Transport & Communi-eation	28.1	29.7

From 1964-65, the percentage contribution by manufacturing sector to G.N.P. is estimated to have increased further. Although the 3rd plan (1965-1970) aimed to boost the G.N.P. by 6.5% annually, the plan got off with a 4.8% increase during the first year. However during the later years the annual growth rate has been remarkedly nigh.

(a) Industrial Sector

The third plan industrial investment targets were focused on these main areas; capital goods, intermediate goods and foreign exchange saving items. No special attention was paid to the farm equipment industry at first. However emphasis has been laid during the later part of the plan and utilization of spare capacities and other ancillary and support-ing facilities by engineering industries - both in public and private sector - towards a successful farm equipment manufacturing program

/especially

especially in the field of tractors is being currently explored.

b) Performance of 3rd plan (Agricultural Sector)

During early 1969, it has been reported by experts who have studied the agricultural growth of Pakistan as "excelled by any country in the world at any time of history"

c) World Bank Aid

During early January 1969, it has been reported that World Bank would be giving US $122.5 million of which $20 million would be for Agricultural Development Bank to enable to import tractors, tube well equipment and agricultural machinery. Apart from the above loan, further assistance for expansion and setting up fertilizer factories is also assured.

d) Investment Promotion - Agricultural Sector

The third plan of Pakistan, although emphasised on production of food, did not stress the aspect of self sufficiency. Hence, in order to minimise imports of food grains (about 1.5 million tons to West Pakistan per year) and promote agro industrial growth, 3rd plan was revised and a policy to achieve self sufficiency in food in 10 year period was formulated. The original investment schedule was also revised to make it more agro based. Agricultural Development Bank and Industrial Development Bank were directed to incorporate activities in this direction.

2. Incentives for Investment

The policies for incentives for investment is available with the "Investment Promotion Bureau" of the Department of Investment, Promotion and Supplies, attached to Ministry of Industries at Karachi.

/(a)

(a) All new investments and expansions are to be approved and supervision of Department of Investment Promotion and Supplies.

(b) No formal rules on local content are issued. Tax holidays normally cannot be obtained unless the value of local content in the production can approach 50%

(c) Tax holiday upto 6 years (negotiable) if progressive local manufacturing program, location in a underdeveloped area, export potential is approved.

(d) Freedom to sell without price control exists at present, although government can exercise controls.

3. International Cooperation

Pakistan is a member of Regional Development Council (RDC), the other two members being Iran and Turkey. Pakistan in principle is willing to explore regional cooperation among neighbouring and other countries.

/SECTION VI

SECTION VI

CONCLUSIONS

a) As regarding farm mechanization there are a great differences between the the two provinces of Pakistan.

Western Pakistan is mainly devoted to wheat and cotton cultivation with rather large farms where 4 wheeled tractors and "occidental type implements", wheat-threshers and in the future combines are going to be widely used.

b) East Pakistan is typically a paddy country with very high density of population. Farm mechanization is here much less developed and will be made by the way of power tillers and simple implements for paddy: threshers, sprayers.

b) Industrialization is also less effective in East Pakistan than in West Pakistan.

c) For the scope of tractors the 5 companies licensed for local manufacturing will certainly able to meet the local demand. It is suggested for the present manufacturing programs be modified eventually to fit the recommendation of the tractor survey mission and regional market sharing between.

d) For diesel engines the existing facilities and those provided for the future in the governmental sector will be sufficient for the local demand. But there is a great need for better utilization of the manufacturing facilities and improvement in fabrication methods and quality control.

e) The same problem is for the manufacture of pumps as regarding specially the quality of cast iron.

f) Manufacturing of power tillers have to be undertaken in East Pakistan upon the baiss of existing plans to meet the future demand.

/g)

g) The typical wheat-thresher starting to be produced in West Pakistan appears to be really suitable for local requirements. It can be improved for more economical fabrication and it is suggested that a special study team take care of this problem considering the need for the same machines in neighbouring countries.

h) The problems of harvesting equipment for wheat and other cereals require a particular attention. Reapers or simple binders may be made locally and be used for a large period of time due to the necessity of feeding cattle with chopped straw and chaff. The future trend is evidently for combines and possibly for the self propelled type. It is suggested that comparative performance tests be made on a large scale between self propelled combines and the small full type one licensed for import this year likewise a comparative study of operating cost of the two types of machines.

i) Emphasis must be made by the governmental agencies and private companies towards production of agricultural implements needed by the farmers and that could be made locally without great difficulty. This suggestion is particularly for: mounted implements for tractors, (except discs and mould & board plow - could be imported) sprayers (hand and power), paddy threshers, weeders and seeders for paddy.

j) In this aspect, it is suggested that the government gives facilities for import of raw material and exemption of custom duties for the same.

k) There is a great and urgent need for rice processing equipment able to produce good quality rice for export. A specialized ECAFE/UNIDO survey team will have to take care of this problem.

Appendix A

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6. Comprehensive Investment Schedule for Third Five Year Plan Period (1965-70) Government of Pakistan.
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8. Season and Crop Report of West Pakistan (1965-66), Department of Agriculture, Government of West Pakistan.
9. Cento Travelling Seminar Report on Farm Tools and Implements, 1966, CENTO Karachi, Pakistan.
10. An introduction to Pakistan Industrial Credit & Investment Corporation Ltd.(1
11. Survey Report on the Feasibility of Manufacturing Plant for Agricultural Implements in East Pakistan, July 1968, Japan Consulting Committee.
12. Studies on Mechanized Cultivation by Mr. Abdul Majid N. Kazi, Professor of Agri. Eng., College of Agriculture Tandojam.

/Appendix - B

Appendix B

Persons and Organizations Visited

1. United Nations Development Program for Pakistan

Hotel Shahrazad, Islamabad, Pakistan

a) Mr. Noel D. Eichorn, Program Officer.

2. Ministry of Industries, Government of Pakistan, Islamabad

a) Mr. Rachid Ibrahim - Additional Secretary

b) Mr. I.H. Khan - Section Officer

c) Mr. Khalid Mahmood

3. Department of Investment Promotion and Supplies, Engineering Directorate Government of Pakistan

a) Mr. Saudur Rahamn - T.P. K. Director General (Karachi)

b) Mr. S.N. Gaq - Dep. Director General

c) Mr. S.M. Hassan - Director (Engineering) (Karachi)

d) Mr. A.R. Mohajir - Director (Policy) (Karachi)

e) Mr. A.R. Kahn - Director (Chemicals) (Karachi)

f) Mr. A.H. Khan - I.P.S. Regional Director (Decca)

g) Mr. Salim Ullah, - Deputy Directors (karachi)

h) Mr. M. Yasin (Karachi)

i) Mr. M.A. Rahim - Asst. Director (Inspection) (Lahore)

j) Mr. K.G. Hussain - Asst. Director (Decca)

4. Farm Mechanization Committee

Ministry of Agriculture and Works, Government of Pakistan, Islamabad

a) Mr. M. Mumtaz Ali
Deputy Agricultural Development
Commissioner, Ministry of Agriculture
and Member-Secretary, Farm Mechanization
Committee, Government of Pakistan

/b)

b) Ch. Mohammad Shafi Gill, T.Pk., T.Q.A.,
Director of Agriculture
Lahore Region, Lahore
Government of West Pakistan

c) Sardar Mohammad Ghazanfarullah Khan, T.Q.A.
of Isakhel Estate
Rahimyarkhan. - Member, Farm Mechanization
Committee.

d) Mr. A.N. Kazi
Agricultural Engineer
Farm Mechanization Committee
Government of West Pakistan

e) Mr. Atlas Khan
Superintending Engineer, Agricultural
Machinery
Peshawar Region
Peshawar, Government of West Pakistan.

5) Department of Industries, Government of West Pakistan, Lahore

a) Mr. Bashir Ahmad - Director of Industries and Commerce

b) Mr. Qazi Zahur-ud-Din - M.A. WPIS(I)

c) Mr. Kazi Iqbal Saeed - Economic Adviser

d) Mr. Ehsanul Haq - Deputy Director (Engineering)

6) West Pakistan Planning and Development Board, Government of West Pakistan, Lahore.

a) Mr. B.A. Kureshi - SQA; ACS, Chairman

b) Mr. Jayed Salim - CPS, Deputy Secretary (Foreign Aid)

c) Mr. Sar Shar Ahmed Khan - CSP, Chief of Agriculture

7) West Pakistan Industrial Development Corporation, Lahore

a) Dr. Basit - General Manager (Heavy Engineering)

8) West Pakistan Small Industries Corporation, Lahore

a) Mr. Shafqat Ali - Manager (Planning.

/9)

9) Department of Agriculture, Government of West Pakistan, Lahore

a) Mr. Amir Ahmed Khan - SQA; TK, Secretary, Agriculture

b) Mr. Majid Hassan Khan - TQA, Joint Secretary (Agricultural Engineering)

c) Mr. Mohammad Aurangzeb - Deputy Secretary (Food)

d) Mr. Latif Abbas - Section Officer

e) Mr. Mohammad Nawaz.

10) Karachi Shipyard and Engineering Works Ltd. (WPIDC), Karachi

a) Mr. Sharif - Deputy Director

b) Mr. Maqbool A. Sheikh - Manager (Administration

c) Mr. M. Sharif - Production Manager

d) Mr. Raheed - Superintendent (Foundry)

11) Pakistan Machine Tool Factory Ltd. (WPIDC), Landhi, Karachi

a) Mr. Abdul Kalam - P.R.S., General Manager

12) M. Mohammad Hussain and Sons, Badami Bagh, Lahore - 6

a) Mr. M. Rasid Ghaznavi - President

13) Ittefaq Foundries and Workshops Ltd., Lahore

a) Mr. Nawab Sharif - Assistant Managing Director

b) Mr. J.W. Weston (Chief Engineer)

c) Mr. Salahuddin - in charge workshops

14) The Batala Engineering Co. (Pakistan) Ltd.

a) Mr. Alfred Schnider - Works Manager

b) Mr. Muhammad Asghar Qureshi - Reception Officer

15) Allwin Engineering Co., Landi, Karachi

a) Mr. Yakub Ali - Chairman

b) Mr. S. Manzoor Ali - General Manager

c) Mr. Asif Ali - Technical Director

/16)

16) Rana Tractors & Equipment Ltd.

Sheikhupura Road, Lahore (M-F Dealer/mfgs)

a) Mr. A.H. Khokhar - Director (Adm & Supply)

b) Mr. I.H. Kazmi - General Manager

c) Mr. Mohammad Iabal - Production Manager

17) Pakistan Industrial Development Corporation, Karachi

a) Mr. Anwar Khan - General Manager (Planning)

18) Industrial Development Bank of Pakistan, Karachi

a) Mr. Z.R. Ahmad - Dep. Managing Director

19) Karachi Chamber of Commerce and Industries, Karachi

a) Mr. Yousuf. H. Sherazi - President

20) Pakistan Industrial Credit and Investment Corporation, Karachi

a) Mr. Zainul - Abedin (Chief Engineer)

21) Department of Commerce & Industry, Government of East Pakistan, Decca

a) Mr. M.M. Islam - Secretary, Commerce & Industries

b) Mr. Muniruzzaman - Director

c) Mr. M.M. Ahmad - Joint Director

d) Mr. Zainul Abedin - Director (Supplies)

e) Mr. Muhuddin Mandal - Dep. Director

22. Department of Agriculture, Government of East Pakistan, Decca

a) Mr. Rashidul Hasan - Deputy Secretary

b) Dr. Amirul Islam - Director of Agriculture

23) Government of East Pakistan, Decca

a) Mr. Shafiul Azam - Additional Chief Secretary (Planning & Development)

/24)

24) East Pakistan Small Industries Corporation (EPSIC), Decca

a) Mr. H. Zaman - Chairman

b) Mr. M.Y. Latifullah - Additional Directors

25) East Pakistan Agricultural Development Corporation (EPADC), Decca

a) Mr. A.M. Anisuzzaman - Director

b) Mr. R.M. Ahmad - Programme Planner

26) Pakistan Industrial Credit and Investment Corporation, Decca-2

a) Mr. K.A. Rashid - Chief Manager

27) Farm Mechanization Institute, Government of East Pakistan, Tejgaon, Decca-5

28) Agricultural Engineering Research Division, Department of Agriculture, Government of East Pakistan, Tejgaon, Decca-5

a) Mr. Mazharul Hug. - Agri. Engineer & Head of Res. Division

29) Decca Chamber of Commerce & Industries, Decca

a) Mr. Akhlaque Ahmed - President

30) Federation of Pakistan Chamber of Commerce & Industry, Decca

a) Mr. Syed Mohsen Ali - President

31) Agricultural Development Bank of Pakistan, Decca

a) Mr. M.A. Hasan - General Manager

b) Mr. S. Ali Kabir - Loan Officer

32) James Finley Co. Ltd., Decca, East Pakistan (M.F. dealer)

a) Mr. G.A. Williams - Manager

33) Tejgaon Engineering Company Ltd., Decca

a) Mr. Kader Bux - Managing Director

(Also of Rahim Metal Industries and Decca Rerolling Mills)

34) Rehim Metal Industries, Decca

a) Mr. Ishaque Mohd

/35)

35) Decca Rerolling Mills, Tejgaon, Decca

a) Mr. Shafiq Ahmed

36) Shahnawaz (East Pakistan) Ltd., Decca-2

(I.H. Dealer)

a) Mr. Abu Yusuf

b) Mr. A. Asadullah

37) K.S.B. Pump Ltd., Tongi, Deccadist

a) Mr. Farid Khan - Deputy Resident Manager

b) Mr. Shah Alam Chowdhury - Adm. Officer

38) Castings & Forgings Ltd., Tongi, Deccadist

a) Mr. Naruddin - Taufique-ul-islam (Owner)

39) Drum Metals Ltd. Tejgaon, Decca

a) Mr. Zakaria Sulaiman - General Manager

40) Nayana Traders Ltd., Decca-2, (Dealers for Iseki)

a) Mr. Nazirul Islam - Chairman

b) Mr. M.A. Khan - Executive Director

c) Mr. W.U. Khan - Business Executive

41) Omar & Sons (Structural), Tejgaon, Decca-2

a) Mr. A.M. Khatri - Director

b) Mr. Mukhtar Ahemed

/Appendix C

Appendix C

PROGRAM IN PAKISTAN

Fact Finding Mission on Industries Manufacturing Agricultural Machinery

FINAL PROGRAMME

DATE	TIME	PROGRAMME
31st December 1968 Tuesday	22.10 hours	Arrival Karachi from Tehran Flight No. SU-045
-do-	-do-	Stay at Midway house, Karachi Airport
1st January 1969 Wednesday	07.00 hours	Departure for Rawalpindi by PIA PK-300
-do-	08.45	Arrival Rawalpindi
-do-	09.30 hours	Call on Mr. Daniel Ropkinson, UNDP, 4th floor, Hotel Shahazad Tel: 24011
-do-	10.00 hours	Meeting with Mr. M. Mumtaz Ali, Member Secretary, Farm Mechanization Committee in Committee room at F-524 Sector G6-4, Tel: 25873
-do-	12.30 hours	Meeting with ....tional Secy, Ministry of Industries.
-do-	13.30 hours	Lunch by Industires Division
-do-	Afternoon	Sightseeing around Islamabad or rest at the convenience of the members of the mission.
-do-	17.00 hours	Departure for Lahore by P.I.K. Flight No. PK 635
-do-	18.15 hours	Arrival at Lahore.
-do-		Stay at Hotel Intercontinental
2nd January 1969 Thursday	09.00 hours	Meeting with Chairman, West Pakistan Development Board
-do-	09.30 hours	Visit to M/s. Mohammad Hussain and Co, Ltd, G.T. Road
-do-	11.30 hours	Visit to M/s. Ittefaq Foundry Ketlakpat.

/-do-

-do-	12.30 hours	Lunch by M/s. Ittefaq Foundry
-do-	14.30 hours.	Visit to M/s. Batala Engg. Co, Ltd, Badami-bagh.
-do-	16.00 hours	Tea by M/s. Batala Engg. Co,
	Evening	Sight seeing.
3rd January 1969 Friday	09.00 hours	Meeting with Secretary, Industries Commerce and Mineral Resources Deptt, alongwith Mr. Basit, General Manager, Heavy Mechanical Engg, WPIDC in the room of Secy Industries, Government of West Pakistan.
-do-	11.00 hours	Meeting with Joint Secretary, Agriculture alongwith Secretary, Food, Chairman WPADC, Chief Regional Manager, ADB of Pakistan in the room of J.S. of Agricultural Mr. Majid Hassan Khan, Joint Secretary of Agriculture Mr. Amu Ahaml Khan.
-do-	Afternoon	Sight seeing, Salimar Garden, Tomb of Jahagir, Shahi Qila
-do-	17.10 hours	Departure for Karachi by PIA Flight No. PK303
-do-	18.50 hours	Arrival at Karavhi, Stay at Hotel Metropole
4th January 1969 Saturday	09.00 hours	Visit to Karachi Shipyard and Engg Works Ltd (Mr. Maqbool A. Sleikh, Manager, Adm. Tel: 224041
-do-	11.30 hours	Discussion with Abdul Kalam of PMTL at PIDC House
-do-	1400 hours	Visit to M/s. Allwin Engg Co, Ltd. Syed Yafub Ali, Chairman
-do-	16.00 hours	Tea at -do-
5th January 1969 Sunday	Sight seeing	i) Clifton, Aquarium ii) Museum iii) Zoological Garden iv) Hill Park
-do-	13.00 hours	Lunch by Director General, Investment Promotion & Supplies.
6th January 1969 Monday	10.15 hours	Departure for Delhi Flight No. LH 692

Final Programme for Visits in East Pakistan

15th January 1969 Wednesday	Arrival at Dacca Flight No. PK-462 from Kathmandu . Stay at Hotel Inter-Continental Two singles/Hotel ~~Intercont~~ three singles	14-15 hours
15th January 1969 Wednesday	Sight seeing	Afternoon
16th January 1969 Thursday	Joint meeting in the Conference Room of East Pakistan Industrial Development Corporation with Secretary, Commerce & Industries Deptt., Secretary, Agriculture Deptt.; Secretary, Food Deptt.; Secretary, EPIDC,; Chairman, EPADC; Chairman, EPSIC; General Manager A.D.B. of Pakistan;	09.00 Hours
16th January 1969 Thursday	Visit to M/s. Rahim Metal Works, Tejgaon, Industrial Area, Dacca	14.00 hours
17th January 1969 Friday	Visit to M/s. K.S.B. Pumps Manufacturing Company Tongi.	08.00 hours
17th January 1969 Friday	Visit to M/s. Casting and Forging Ltd., Tongi	09.00 hours
17th January 1969 Friday	Sight seeing	Afternoon
18th January 1969 Saturday	Departure for Bangkok by PIA Flight No. PK-712	11.20 hours

Appendix XIIA

Appendix - IIIA
Details of Three Farm Equipment Manufacturers Visited
(West Pakistan)

Item	Mohammad Hussain & Sons Lahore-6	Ittelfaq Foundries and Workshop Limited, Lahore	The Ba tala Engineering Co. (Pakistan) Ltd, Lahore (Brand name BECO)
1. Background information	Established in 1948	Factory in West Pakistan & in East Pakistan. Has also 3 cold storages. Lahore plant has 40 hectares land area	Pumps, multistage & deep well pumps with American collaboration. Total investment US $20-25. A public limited company.
2. Product line	a) Diesel Engine 10-100 Hp (Stationary) b) Centrifugal pumps 3"-8" c) Wheat threshers (i) 300-400 kg/hr (ii) 400-600 kg/hr	Diesel Engine (low & high speed), centrifugal pumps, wheat threshers, fans, radial drills, lathes	Centrifugal pumps, deep well turbine pumps, high and low speed diesel engines (15 Hp at 1500 rpm and 20 Hp at 600 rpm), chaff, cutters, textile looms, shapers, lathes and drilling machines.
3. Production	1968 Capacity Diesel Engine 1000 2000 Centrifugal pump 1000 2000 Threshers 200 500-1000	1968 Diesel engine (R..... Licence) Slow speed 3600 High speed 400 Centrifugal pump 6000 Threshers 650	1968 Installed Diesel engine 4000 6000 Centrifugal pumps 2000 4800 Turbine pumps 600 (Single shift capacity)
4. Total staff	550 total of which 500 workers, 20 technicians, 25 other staff. Salary of workers Rs. 150-650 P.M.	3000 total in the whole complex	NA.
5. Sales organizations	Headquarters 5 persons Dealers/Agents 4 Dealers Commission 5-10%	NA	NA

/6.

6.	Present imports	Horizontal engine - Fuel-inj.system. Enclosed type engine - Fuel pump, forgings, etc.	Fuel injection system	Import duty 25-40%. Fuel injection system.
7.	Present important facilities	Foundtry castiron 2 ton/day Machineshop	Foundry CI 8 ton/hr steel 7½ ton/heat Rolling mill Machineshop Engineering & Quality Control Press shop, forge shop, steel furnace	Very good machine shop with 2 way borer, multivertical drill, broaching machine, etc. Foundry 10-15 t/day capacity Steel iron furnace rolling mill Mechanized good equipment
8.	Future plans	1) to expand wheat thresher production 2) to introduce rice thresher	1) Reaper 4½ .... 2) Pull type combine engine driven - 6' 3) Seed drill 4) disc plow 5) road rollers	—
9.	Remarks	Quality control system needs improvement	—	High inventroy of diesel engines. 1968, only 2000 sold & 200 are in stock. Hence two sections have been closed. Has MM Licence and machine tools.

Appendix IIIB

Details of all Diesel Engine Manufacturers in West Pakistan

The types of Diesel Engines are (i) Slow speed Horisontal Engines upto 100 H.P. and (ii) High Speed Vertical Engines upto 30 H.P. at 1500-2000 RPM are being manufactured in the Country. Their particulars are as under :-

Sl. No.	Name of Unit Factory and Office Address.	Year of establishment.	Size of Employment.	Investment Group.	Ann. Production Capacity
1	2	3	4	5	6
1.	Abdul Majid & Sons Factory-13-Dil Muhammad Road. Lahore (Phone 2542) Office G.T. Road, Lahore (Phone 5270)	1920	V	VII	Rs.5,75,000 (80 Engines)
2.	Ahmad Bux & Sons Factory-Ahmad Manzil 22, Brandreth Road Lahore (Phone 2133) (4925) Office -Ditto.	1928	IV	VI	Rs.520000 (80 Engines)
3.	Alwis Limited Factory-54 Railway Road Lahore (Phone 60297) Office-Ditto.	1953	III	III	Rs.100000
4.	Allah Din Ghulam Mohammad & Company-Factory-Badami Bagh, Lahore (Phone 66743) Office-Ditto.	1948	III	IV	Rs.240000
5.	Batala Engineering Co., Factory-Badami Bagh Lahore (Phone 3881, 3882 & 4151) Office- The Mall, Lahore (Phone 5883, 5884 & 2163)	1947	VII	VII	a) Slow Speed 625 Nos. b) High Speed 2400 Nos.

Sl. No.	Name of Unit Factory and Office Address.	Year of establishment.	Size of Employment.	Investment Group.	Ann. Production Capacity
1	2	3	4	5	6
6.	Ghulam Muhammad & Sons Factory-Badami Bagh Lahore (Phone 60053) Office-23-Brandreth Road Lahore.	1920	II	II	Rs.1,34,000
7.	Good-Will Foundry & Workshop. Factory Badami Bagh, Lahore Office - Ditto.	1947	II	III	Rs.1,60,000
8.	Ghulam Haider & Sons Factory-Chowk Delgaran, Baber Street No. 25 Lahore, Office - Ditto.	1935	II	IV	Rs. 98,500 (16 Engines)
9.	H.R. Muhammad Ali Khuda Bux & Sons Factory-Brandreth Road Lahore (Phone 67643) (Office - Ditto)	1947	II	IV	70,000
10.	Hafiz Dost Muhammad, Wali Mohammad. Factory - Chowk Dalgoan Ram Gali, No. 5 Lahore Office - Ditto.	1947	I	I	60,000
11.	Hind Engineering & Factory Factory - Wasanpura Lahore. Office - Ditto.	1940	II	IV	1,00,000
12.	Ittefaq Foundary & Workshop. Factory-90, Railway Road, Lahore (Phone 3769, 65035/6) Office - Ditto.	1940	VI	VII	20,00,000
13.	Ittehand Foundary & Workshop (Regd) Factory-outside Serai Sultan, Lahore (Phone 66693) Office - Ditto.	1945	II	V	1,50,000

Sl. No.	Name of Unit Factory and Office Address.	Year of Establishment.	Size of Employment.	Investment Group.	Ann. Production Capacity
1	2	3	4	5	6
14.	K.B. Chishti & Sons Factory - 15 Dil Muhammad Road, Lahore (Phone 4425) Office, Badami Bagh, Lahore (Phone 2815)	....	II	II	5,00,000
15.	Kausar Engineering Works Factory - 71 Fleming Road Lahore (Phone 2242) Office - Ditto.	1942	II	IV	1,00,000
16.	Ludhiana Hosiery Machine Works. Factory - Qila Lachman Singh, Lahore Office - Ditto.	....	II	II	1,50,000
17.	Muhammad Siddique and Bros. Factory- Badami Bagh, Lahore (Phone 5824) Office - Ditto.	1948	III	IV	1,00,000
18.	M. Muhammad Hussain & Sons. Factory - Badami bagh, Lahore (Phone 4653) Office, Brandreth Road, Lahore. (Phone 2673)	1947	III	III	14,00,000

19.	Muhammad Hayat Muhammad Bux & Bros. Factory-Dil Muhammad Road, Chishti-Street., No.1, Lahore (Phone 64040) Office, Abdul Qayum Road, Badami-Bagh, Lahore (Phone 68395)	1920	II	V	Rs. 70,000
20.	Muhammad Bux & Sons. Factory-71, Brandreth Road Lahore (Phone 65658) Office - Ditto	1910	II	III	Rs. 1,20,000
21.	M. Badr-Uddin & Co., Factory, 86-Railway Road Lahore. Office - Ditto	1896	III	IV	Rs. 350,000
22.	Noor-Din & Sons. Factory-Brandreth Bagh, Lahore. (Phone 64165) Office-23 Brandreth Road, Lahore (Phone 64720)	1920	III	VI	Rs. 1,00000
23.	Shabir Ahmad & Bros. Factory-Badami Bagh, Lahore, Office-Ditto	1933	II	IV	Rs. 80,000

Note: a) Size of employment I) 1-19 workers II) 20-49, III) 50-99 IV) 100-249, (V) 250-499

b) Investment Group I) Rs. upto 19,000 , II) Rs. 20,000-49,000, III) 50,000 - 99,990, IV) 10,000 - 249,000, V) 250,000 - 499,000, VI) 500,000-999,000, VII) Above 999,000.

/Appendix III-C

B-365

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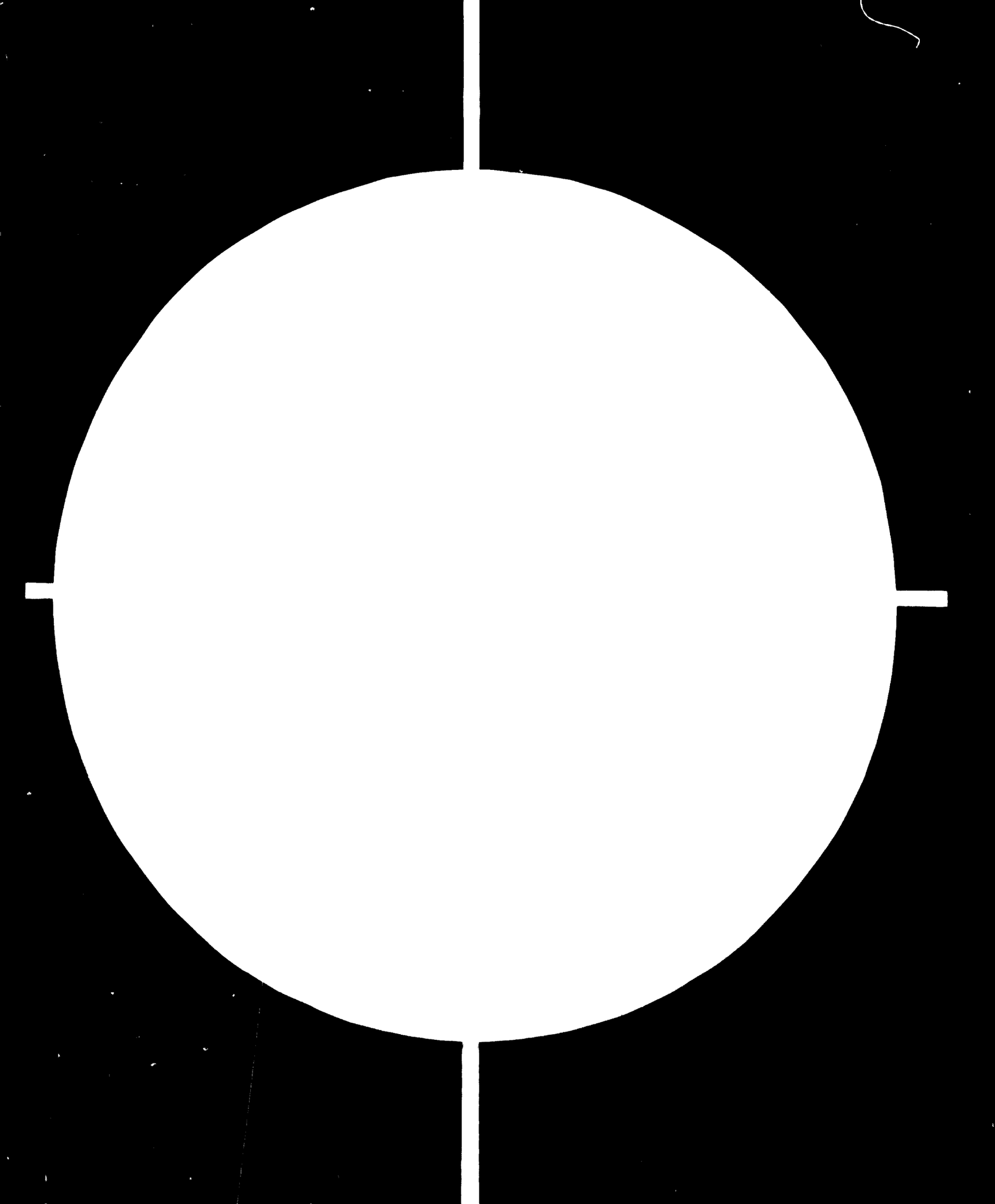

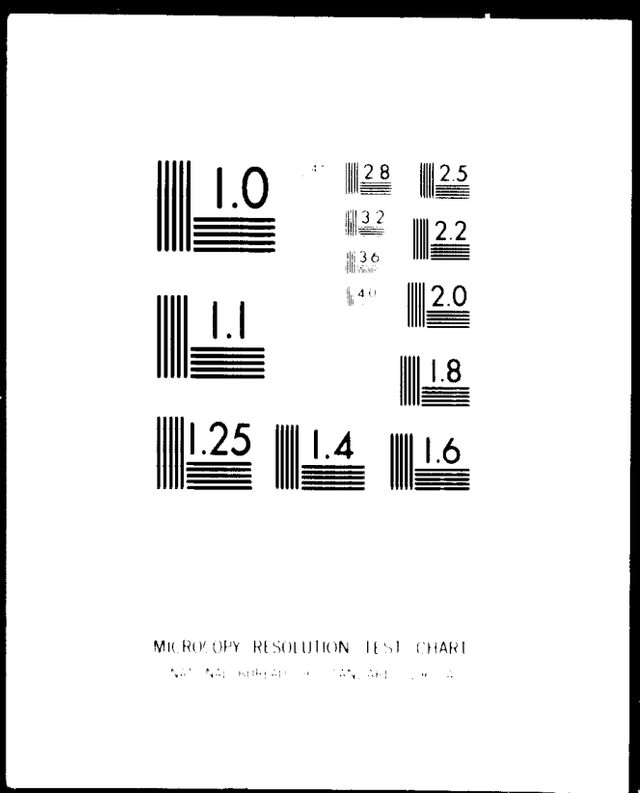

Appendix III-C

Details of Major Agricultural Machinery Manufacturers Visited in East Pakistan

1. Name of Company	Omar & Sons (Structurals) Tejgaon	K.S.B. Pump Ltd. Tongi, Decca Dist
2. Product Line	Trailers both tipping of non tipping	Centrifugal pumps (1/4 - 5 cfs) and trolleys, sluice va lves etc. All castings purchased from outside sources
3. No. of workers	30	Total 165, workers 65
4. Production	Trailers / Per Month / Price (Rs.) 3 ton tipping / 35-45 / 8,000 5 ton / 35-45 / 12,000 30 T low deck / 4-6 / 42,000 60 t - " - / 4-6 / 85,000 Capacity 600 trailer/yr/shift	Item / Production / Capacity 2 cfs centrifugal pump) 1/4 - 1 cfs) / 300-350/pm / 350/month Trolleys / 200-300 / 350/M Sluice valve / - / 1000/yr Deepwell pumps / 100/month / - 3/4 - 1 cfs pumps / 400/month / -
5. Imports	Rear axle, hydraulic, equipment, types	Imports 30% for deep well pumps
6. Future plans	—	To manufacture 2 cfs pumps 800 pumps a month, 3/4 and 1 cfs pumps 600-800/year and deep well pumps about 150 per month. Plans to have own foundry.
7. Remarks	Needs encouragement. Fairly good operation	85% products sold to EPIDC 100% final pressure testing Proformance testing on request. Good operation and housekeeping.

Appendix III - D

Details of Major Electric Motor Manufacturers

Electric Motors:

1. M/s. A.K. Kahn and Co, Ltd. Chittagong

i) Planned Production Capacity	1-5 HP. 5000 Nos.
3 phase squirrel Cage Motors	6-10 HP 25000 Nos.
	11-30 HP 1500 Nos.
	11-40 HP 200 Nos.
	40-60 HP 100 Nos.
3 phase slip ring motors	11-40 HP 200 Nos.
	40-60 HP 100 Nos.
ii) Local currency investment, 12 lacs	
iii) Foreign currency investments8 lacs.	
TOTAL 20 lacs	

2. M/s. Siemen Pakistan Engineering Co, Ltd, Karachi.

i) Planned Production Hallow Shaft Vertical Motors and induction motors upto 70 HP	10,600 Nos. (total 80,000 HP)
ii) Local currency investment:	
iii) Foreign currency investment.	Rs. 146 lacs.
Total:	Rs. 146 lacs.

3. M/s. Pak Electron Ltd.

Electric Motors	4000 Nos.
Local currency investment:	Rs. 22.50 lacs.
Foreign currecny investment:	Rs. 12.50 lacs.
Total:	35.00 lacs.

4. M/s. Batala Engineering Co, (PK) Ltd, Lahore.

Capacity Drip Proof Horizontal Motors.	2400 Nos.
Vertical Hollow shaft motors-upto 40 HP	
Local currency investment:	Rs. 25.44 lacs.
Foreign currency investment:	Rs. 22.05 lacs.
Total:	Rs. 51.49 lacs.

5. M/s. Climax Engineering Co, Ltd, Gujranwalla.

/Capacity

5. M/s Climax Engineering Co, Ltd,
Gujranwalla

Capacity electric motor (upto 50 HP).	54,000 HP
Local currency investment:	Rs. 4.5 lacs.
Foreign curren cy investment:	Rs. 12 lacs
Total:	Rs.16.5 lacs.

Appendix III - E

List of Manufactures of Animal Drawn Implements, Hand Tools etc. in East Pakistan

1.	Naramgong Iron Works (EPIDC), Decca	Bullock drawn implements, tools, rice hullers, castings for engines, anchors etc. Forging to specific order (40 workers)
2.	Castings & Forgings, Decca	Simple hand tools (25 workers)
3.	Karim Industries Works, Decca	Spades, shovel etc. (30 workers)
4.	A Salam & Co., Decca	Simple hand tools (20 workers)
5.	Cheman Engineering Works, Chittagong	Hand tools & simple implements (15 workers)
6.	Zaheed Metal Industries, Bugra	Rice Hullers etc. (60 workers)
7.	Chand Pur Factor (EPSIC)	Paddy threshers pedal operated (15 workers)
8.	Rahim Metal Works, Decca	Press parts (non agricultural)
9.	K.S.P. Pump Manufacturing Co., Tongi	Pumps (power)
10.	Mohajir Kharkhana (coop society)	Paddy thresher, weeders, hand pumps, power tiller parts etc.
11.	North Bengal Iron & Steel Industries (Decca)	Small implements & tools.
12.	Sprayer factory - Sidhrigong Industrial Area	Hand sprayers.
13.	Omar & Sons (Structural), Tejgaon	Trailers.
14.	Auto Equipment & Co.	Hand sprayers
15.	Adamji and Co.	Hand sprayers

/B. New

B. New Farm Machinery Industries Planned or Existing Industries Being Expanded

a) Tractors (West Pakistan)

Recently Government of Pakistan has approved proposal for the Assembly/ Progressive Manufacture of 'Fiat', Massey Ferguson, International Harvester and Ford Tractors in the Country with an annual capacity of 500 tractors each. The factory for the manufacture of these tractors is expected to start local production in about a year. The other particulars are given here under: -

	Fiat	Massey Ferguson.	International Harvester	Ford
Production Capacity	500	500	500	500
Estimated of Years of Production	1970	1970	1970	1970
Investment Local	Awaited	Rs. 2.25 mil.	Rs. 1.632 million	Rs. 33.0 million
Investment Foreign	Awaited	Rs. 2.50 lacs.	Rs. 1.70 million	Rs. 45.26 million
Total investment	Awaited	Rs. 2.5 mil.	Rs. 3.32 million	Rs. 78.36 million

Details of Rana Tractors and Equipment Co. Ltd. who are assembling Massey Ferguson Tractors is given in Appendix III-F

b) Power Tillers (East Pakistan)

As a result of standardization and arrpoval Yanmar and Iseki have been granted licences to manufacture power tillers according to following schedule.

	1 year	2	3	4	5
Yanmar	1300	1800	2200	2700	3000
Iseki	1500	2000	3000	3000	5000

/Their

Their Particulars are as under:

	Yanmar	Isiki
Planned Production Capacity	3000 Nos.	10,000
Estimated Year of Capacity	Starting 1970 Completion 1975	Starting 1970 Completion 1980
Local Investment	Rs. 3.40 million	Rs. 3.6 million
Foreign Investment	Rs. 2.268 - " -	Rs. 2.4 - " -
Total Investment	Rs. 5.67 - " -	Rs. 6.0 - " -

e) Pumps. (East Pakistan)

East Pakistan Machine Tools Factory, Dacca an EPIDC's enterprise as being established, will manufacture 3,000 pumps per year. The rating of the pumps is one cusec and two cusecs. The production is to start by 1970. The capacity may later be raised to 5,000 Nos. per annum.

d) Engines

(i) West Pakistan

Proposal for the manufacture of Bedford Diesel Engines for use on Tractors and Trucks is under consideration of PICIC. The proposal envisages an annual capacity is 18,000 engines (1000 for trucks and 8000 for tractors) Other particulars are as under:

Estimated year of operation:	1970
Local currency investment:	Rs. 3.9 million
Foreign currency investment:	Rs. 8.6 million
Total:	Rs.12.5 million

/(ii)

(ii) East Pakistan

Another Diesel engine plant is being set up at Dacca by EPIDC for the manufacture of 3,000 per annum. Single/two cylinder engines 8 to 16 HP. at 1500 R.P.M.. The capacity may be raised to 5,000 per annum later on.

Another project sponsored by M/s. Small Engines and Farming Aids has been approved for the manufacture of Small Gasoline Engines in Collaboration with a Dutch Manufacturers. Particulars are as under:

Planned production capacity:	20,000
Estimated year of operation	Starting 1970 Completion 1975
Estimated local currency Invest:	Rs. 2.25 million
Foreign Currency Investment:	Rs. 2.45 million
Total investment	Rs. 5.0 million

e) Attachment/Implements

Recently the Government of Pakistan has approved the following proposals for the manufacture of Agricultural Implements. Their Particulars are given here under:-

Description of Implements and annual capacity	M/s. Adamji & Sons Ltd.	M/s. Facto Ltd.
i. Disc Harrow 16, 20, 24 disc	5100 Nos.	5000 Nos.
ii. Disc Ploughs 2, 3, 4 furrow		
iii. Cultivater 9, 11, 13 times		
iv. Share Ploughs - 5 makes		
v. Graders 6 Feet W. 7 Feet		

~~Foreign Currency Investment~~ /Estimated year of operation:

Estimated year of operation:	1970	1970
Local Currency Investment	Rs. 1.5 million	
Foreign Currecny Investment	Rs. 0.5 million	
Total Investment	Rs. 2.0 million	

Machine Tool Factory Dacca an E.P.I.D.C. project which will be in operation at the end of 1968 will have facilities for manufacture of 370 tons per year of Agricultural Harvesters and 30,000 Nos. of ploughs per year by 1972.

Appendix III-F

Tractor Assembly

Rana Tractors & Equipment Ltd. (Assembly plant)

a) Activities: Sole distributor for Massey Ferguson in Pakistan and have been licensed to manufacture Massey Ferguson tractors.

b) Investment: Authorized capital Rs. 10 million issued, subscribed & paid up Rs. 2.25 million (1967).

Reserves & surplus Rs. 0.614 million (1967)

Fixed capital expenditure Rs. 1.614 million (1967)

c) History: Rana Tractor & Equipment Limited were appointed on sole distributors of Massey Ferguson farm machinery in Pakistan in 1964. The total sales from 1964 are as follows.

Year	Sales Rs. million	Project Rs. Million	Dividend
1964	1.81	0.021	-
1965	7.18	0.099	-
1966	14.54	0.744	10% paid
1967	29.79	1.663	12½% proposed

/In 1967

In 1967, Rana Tractors applied for licence to manufacture MF 135 tractors and the licence was granted recently. Assembly of tractor was as follows:

1967	2700 Nos
1968	1200 Nos.

For the present, manufacturing program mainly depends upon IDA loans and foreign exchange availability.

d) Present facilities available

a) Land

b) Assembly shop - building

c) Store area

d) Training school

e) Manufacturing plans

Phase 1 1968-69 — Assembly of tractors for C.K.D. tractor components to be received in cycle of 24 units with engine, transmission, hydraulic pump, and rear axle fully assembled with the reminder of the tractor being fully knocked down. Local battery to be used. Painting to be done locally. Foreign exchange savings expected around 5%

Phase II 1969-70 — Tractors to be received in completely knocked down condition with the exception of hydraulic pump and the diesel engine. Approximately 20% local content foreign exchange saving expected to be 17%

Phase III 1970-75 — Plan to manufacture 5000 trucks/yr. 50-70% local components including transmission, gears, shafts, etc. Foreign exchange savings expected to be 40% by 1975.

/f)

f) Plans for local manufacture: Sheet metal, forging, castings, electrical items, engine components, etc. castings for local ancillary sources.

g) Tractor Price: MF 135 Rs. 14,000/- on waiting list - 2800 numbers.

Appendix III - G

Details of Other Industries Visited in West Pakistan

1.	**Name**	Karachi Shipyard & engineering Works (Ltd) (WPIDC) west wharf Karachi	Pakistan Machine Tools Factory Ltd. (WPIDC) Lundhi, Karachi-22.	Allwin Engineering Co., Landi, Karachi
2.	**Total investment and staff**	US $ 40 million by 1971-72. Present about US /30 million Foreign loan 40% Total foreign exchange less than 50%	About US$ 38 million when completed in 1971-72. 50% foreign exchange requirement Total staff present 1200 and by 1971-72 will be 3000	Total staff 280, of which 150 skilled, 25 technicians, 30 staff and about 35 apprentices.
3.	**Major activities**	a) Ship building b) ship repair, c) General engineering, d) Foundry	a) Building machine tools b) job orders for automative castings, forgings, and machining	I) Manufactur of a) Pistons b) cylinder lines c) piston rings d) Piston pins e) valves and guides for all type of petrol and diesel engines for spareparts market
4.	**Facilities and plans**	a) Foundry capacity Single casting / Per day CI 12 tons / 20 tons Cast steel 3 tons / 10 tons Non Ferrous 800 lbs / 2 tons Present foundry production job orders for sugar mill, rerolling industries, electric motor castings. There is good metallurgical laboratory and facilities for chemical and physical testing The foundry is not jolly mechanized. Hand core making and noncontinuous pouring. There are heat treatment and annealing facilities.	4) Machine Building Production started in Nov. 1968. Annual program is for 300-350 machine tools. (i) 40 mm Turret lathes - 100 nos. (ii) 1300 x 330 mm milling machines - 50 nos. (iii) 1050 x 225 mm milling machines - 200 no. During initial stages production of milling machine will be taken up. It is estimated that machine building activities contribute to 20-30% of total turn over of the factory	II) Manufacture of a) Radiators b) Leaf springs for tractor and automobiles - spare-parts market III) Manufacture of rollers for crawler tractors - spareparts market IV Manufacture of vacuum cylinder for railways. 70% of products sold to government agencies (Power and Water Corporation, Agricultural Department, Fleet owners and other organizations)

It was informed that there is spare capacity in foundry as follows:
Cast iron 100 ton/month
Steel casting 80 ton/month

Future plans include supply of castings (transmission housing differential housing, clutch housing etc) to an automotive manufacturer, through machine tool factory. No plans yet for castings for castings for tractors.

The castings presently produced appears to be good. Although the foundry has a pattern shop they would like to have tried out imported patterns for automotive castings.

b) Machine shop
Machine shop has turning, boring planning, cylinderical grinding, centerless grinding, housing, and other machining facilities.

b) Job order activities
(i) Forgings: forge shop will be started next year to
(2) Machining:
a) Planning to undertake machining operations of castings made by Karachi shipyard to be suppliede to Gandhara industries for Bed Ford Trucks.
b) Also to supply transmission components ~~for~~ of MF-135 tractor
c) Manufacture transmission components for Jeeps. (about 7000 units a year by 1971-72.
The factory has equipment for gear cutting

Facilities available
a) Machine shop
b) Foundry for Ferrous of aluminum
c) Steel castings
d) Heat truth
e) wood working
f) fabrication
g) welding

Has good physical and chemical testing facilities.

APPENDIX III-I

Details of Foundries and Other Component Manufacturers

NAME OF INDUSTRIES	DESCRIPTION OF PROJECT	CAPACITY PER ANNUM	TOTAL INVESTMENT Rs. IN LACS.
i) M/s. Vallibhoy Kamarudddin Sind Ltd., Karachi (being set up)	General Castings	2,000 tons	799
ii) M/s. C.N. National Industries Pak. Ltd., Lahore.	-do-	2,500 tons	28.71
iii) M/s. O.K. Foundary and Engineering Works Ltd., Lahore.	G.I. Pipes	13,200 tons	84.21
iv) M/s. Yazdani & Co. Shekhupura Road, Lahore	Steel Ingots	6,000 tons	10.95 Electric furnace low frequency 2x1 ton each
v) M/s. Qureshi Engineering and Foundary Works, Karachi	General Castings		
vi) M/s. Mohammad Hussain & Sons, Lahore	Diesel engines		
vii) M/s. Ittifaq Foundary & Workshop Ltd., Lahore	Diesel engines Road Rollers	15,000 tons	2 electric furnaces, 2½ tons each. Total 5 tons.
viii) M/s. Abdul Mahid & Sons, Lahore.	-do-		
ix) M/s. Ahmad Baksh & Sons, Lahore	-do-		
x) M/s. Taj Foundary & Workshop Daska	-do-		
xi) M/s. Sind Chemical & General Industries, Hyderabad.	-do-		Assembly of H. speed Diesel Engine
xii) M/s. Batala Engineering Co. (Pak) Ltd., Badami Bagh, Lahore	Diesel Engine Pumps, Machine Tools etc. General Castings	16,000 tons per annum.	

/xiii)

	NAME OF INDUSTRIES	DESCRIPTION OF PROJECT	CAPACITY PER ANNUM	TOTAL INVESTMENT Rs. IN LACS.
xiii)	M/s. Modern Sanitary Fitting Manufacture (Pak) Ltd., Dacca	G.I. Pipes	2,400 tons	13.06
xiv)	M/s. Comilla Mohajir Cooperative Karkhana Ltd., Comilla	General Casting	Rs. 4 lacs	
xv)	M/s. Kasons Engineering Machinery Proudcts, Chittagong	Cast Iron Machinery Parts	880 tons	6 lacs
xvi)	M/s. Gulfara Habib Ltd, Khulna.	General Castings	1000 tons	34
xvii)	M/s. STAR Fabrication Foundary and Engineering Works. Dacca	G.I. Pipes	1000 tons	4.62
xviii)	M/s. Renwick Co, (Pak) Ltd, Kustia	General Castings	Rs. 12 lacs	2.90
xix)	M/s. Tejaon Engg Co, Ltd.	Textile Machinary Parts	Rs. 30 lacs	3.5
xx)	M/s. Industrial Engineers, Dacca	-do-	14.00 lacs.	
xxi)	M/s. Ismail Mohammad and Sons, 325, Asadgonj, Chittagong	Malleable Castings	1000 tons per annum	Rs. 10 lacs

Other Manufacturers (Crankshafts)

1. Sh. Abdul Rahim Allah-Ditta
Registered.
Factory-Badami Bagh, Lahore.
(Phone 64167)

2. Sadiq Engineering Works
Factory - Outside Sheranwala Gate,
Lahore.

3. Shadab Foundry
Factory - Nishat Road, (Daska)
Sialkot.

4. Taj Foundary & Workshop
Factory - Nishat Road, Daska
(Sialkot)

5. Modern Foundry Works
Factory - Railway Road, Multan.

	Industry Wing	Wing	New Capacity & Expansion value in Rs. in lacs.			Balancing Modernisation and replacement value in Rs. in lacs.			Capacity to be developed per year	Existing and sanctioned capacity up to 31.3.68
			Int.	Ext.	Total	Int.	Ext.	Total		
1.	Steel Foundaries	E.P.	40	40	80	-	-	-	10,000 tons	6000 tons
		W.P.	65	65	130	-	-	-	15,000 tons	27,000 tons
2.	Iron and Steel Production (Alloy Steel)	E.P.	800	1000	1800	-	-	-	100 ton per day	200 tons.
		W.P.	800	1000	1800	-	-	-	100 - " -	200 tons.
3.	Ferro-Chrore and other ferrow alloys	E.P.	20	30	50	-	-	-	500 tons	
		W.P.	20	30	50	-	-	-	500 tons	
4.	Cast Iron Foundries	E.P.	30	60	90	10	10	20	10000 tons plus casting valued Rs. 2.05 lacs.	66000 tons plus casting value at Rs. 224.5 lacs.
		W.P.	30	60	90	10	15	25		
5.	Agricultural tools and implements	E.P.	10	15	25	2	3	5		
		W.P.	5	10	15	1	2	3		
6.	Diesel and other I.C. Engine	E.P.	40	50	90	5	10	15	5000 Nos.	3300 Nos.
		W.P.	136	220	364	15	30	45	18000 Nos.	8100 Nos.
7.	Agricultural machinery and equipments	E.P.	45	85	110	10	15	25	Worth Rs.50 lacs.	14000 Nos.
		W.P.	75	100	175	20	30	50	Worth Rs.50 lacs.	1,97,000 Nos.
8.	Tractors and components (including power tillers and tractors drawn implements)	E.P.	15	20	35	5	5	10	10/12000 Nos. Power tillers	
		W.P.	20	35	55	5	10	15	15 tractors 15650 pieces of tractors drawn implements.	
9.	Pumps and parts th thereof	E.P.	50	50	110	3	5	8		
		W.P.	50	60	110	5	10	15	21800 Nos. 12700 Nos.	
10.	Light Engg workshop for service & repairs	E.P.	25	30	55	5	5	10		
		W.P.	10	15	25	10	10	20		

Note: E.P.: East Pakistan, W.P.: West Pakistan, [illegible]

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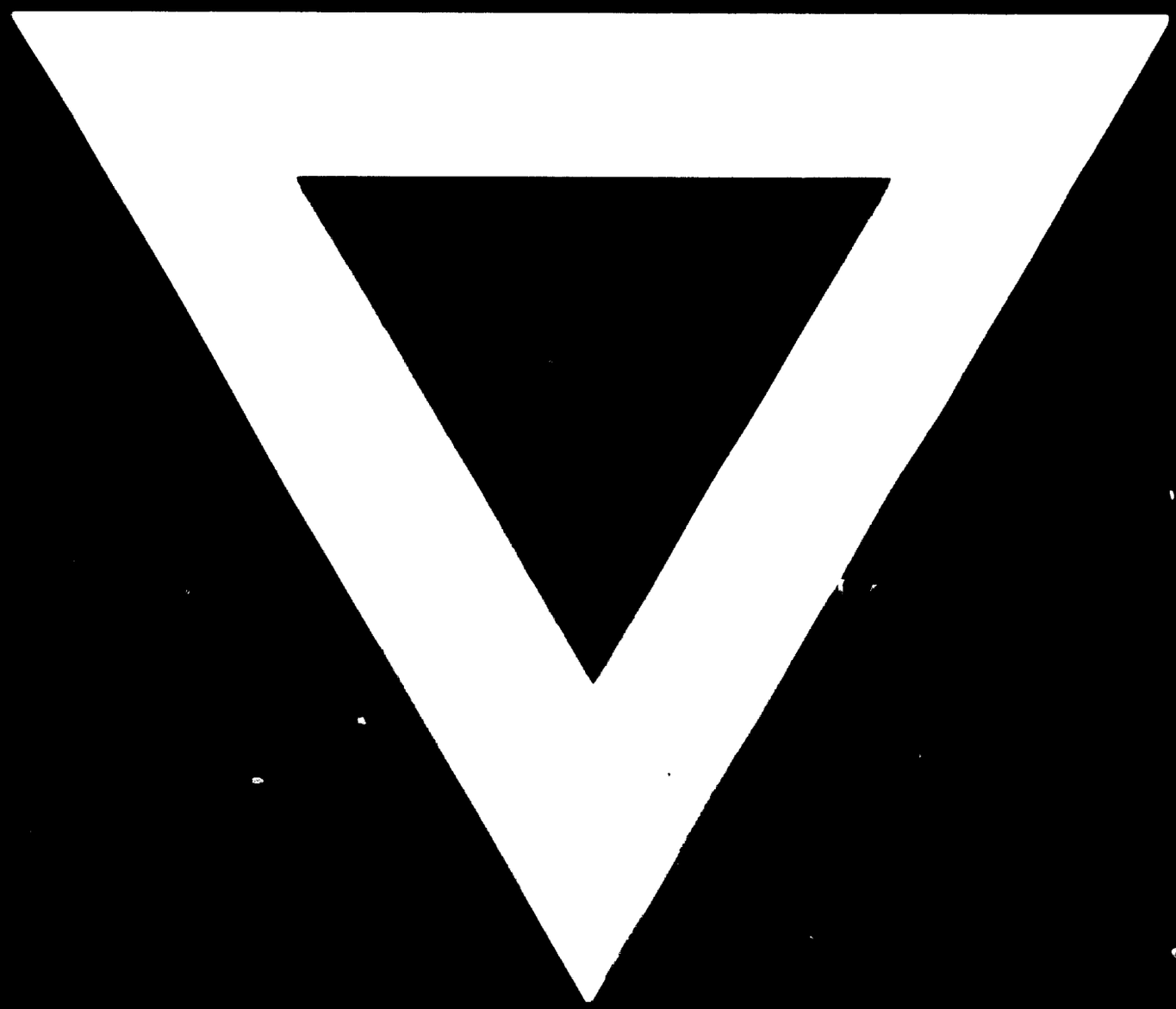

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