

FOURTH PLAN

REPORT OF THE WORKING GROUP ON
TEXTILE MACHINERY

(GROUP VIII—DECEMBER, 1964)

G GROUP ON MACHINERY INDUSTRIES

REPORT OF THE WORKING GROUP ON TEXTILE MACHINERY FOR FOURTH PLAN

(Final Report)

For preparing industrial production programme for the Fourth Plan, the Planning Group for Machinery Industries, Department of Heavy Industries, in pursuance of the decision taken at the fifth meeting held on 18th September, 1963, constituted, in consultation with the Planning Commission, the Working Group—VIII on Textile Machinery under the Chairmanship of the Textile Commissioner. The composition of the Group and general terms of reference are given in Annexures (A) and (B) respectively.

2. The Working Group VIII was empowered to constitute Sub-groups. Accordingly, the Working Group formed two Sub-groups, *viz.*, (1) Sub-group on Cotton, Woollen, -Silk and Man-made Fibre Weaving Machinery and (2) Sub-group on Jute Machinery, for detailed study of the requirements of textile machinery, its indigenous availability and manufacturing programme, and also the requirements of the machinery manufacturers to achieve their planned manufacturing programme during the Fourth Plan period. The composition of the two Sub-groups is given in Annexure (C).

3. Based on the study of the above two Sub-groups, the Working Group VIII on Textile Machinery has formulated the production programme of textile and jute machinery for the Fourth Plan.

4. Part I of the report gives an assessment of future demand and indigenous availability of cotton, woollen, silk and man-made fibre weaving machinery and also the requirements of the machinery manufacturers; and Part II gives an assessment of future demand and indigenous availability of jute machinery and also the requirements of the jute machinery manufacturers.

PART I

ASSESSMENT OF FUTURE DEMAND AND INDIGENOUS AVAILABILITY OF COTTON, WOOLLEN, SILK AND MAN-MADE FIBRE WEAVING MACHINERY, ETC.,

The formulation of any programme of development entails, in the first instance, an assessment of future demand. The Group has assessed the requirements of textile machinery for the cotton, woollen, silk and man-made fibre weaving industries during the Fourth Plan on the basis of estimates made by the Sub-group on Textile Machinery set up by the Planning Group on Textile Fibres. These requirements have been assessed separately for (i) expansion and (ii) rehabilitation/modernisation.

I. REQUIREMENT OF COTTON TEXTILE INDUSTRY DURING THE FOURTH PLAN PERIOD

Expansion requirement.—The spinning capacity of the cotton textile industry is expected to reach 16.5 million spindles by the end of the Third Plan and produce 2170 million lbs. of yarn. To produce 2755 million lbs. of yarn which is the target of the Fourth Plan, the installed spinning capacity should be 19.7 million spindles. Thus during the Fourth Plan period about 3.2 million additional spindles should be brought into being.

It is anticipated that 15,000 additional looms might get installed by the end of the Third Plan. The total installed capacity would reach 2.18 lakh looms and produce cloth in the mill sector to the tune of 5400/5500 million yards. 6,200 million yards have been tentatively prescribed as the target for the cotton mill sector for the Fourth Plan. The installed capacity of the loomage at the end of the Fourth Plan would thus be required to move up to 2.48 lakh looms. There should thus be an addition of 30,000 looms during the Fourth Plan.

Rehabilitation requirement.—Important as the requirements of machinery for expansion are, the need for rehabilitation and modernisation of very old machinery, which the mills now have, is no less important specially as worn out spindles and looms mean less production of cloth and poorer quality of cloth, thereby adversely affecting both the internal availability of cloth and the export potential.

Rehabilitation of the industry has been envisaged at 2.7 million spindles and 33,000 looms in the mill sector and 7,500 looms in the powerloom Sector.

The requirement of major items of textile machinery on above account would be as under:

TABLE I

Requirement of Cotton Textile Machinery During Fourth Plan

Name of Machine	Value based on 1963/1964 FOB/Ex-Works Prices					
	For rehabilitation of 2.75 m. spindles, 33,000 looms in mill-sector & 7500 looms in Power-loom Sector.		For expansion of 3.2 million spindles and 30,000 looms		Total	
	Units	Value (Rs. crores)	Units	Value (Rs. crores)	Units	Value (Rs. crores)
	1	2	3	4	5	6
Blow room machinery	220	8.80	256	10.24	476	19.04
Card	4585	8.25	5333	9.60		
	(con.)		(con.)		13225	31.08
	1530	6.12	1777	7.11		
	(H.S.)		(H.S.)			
Comber Set	110	4.40	128	5.12	238	9.52
Draw Frame Set	660	4.62	768	5.38	1428	10.00
Speed Frame Set	1100	8.25	1280	9.60	2380	17.85
Ring frame of 400 spl. each	6875	33.00	8000	38.40	14875	71.40
H.S. Winding	575	5.17	683	6.15	1258	11.32
H.S. Warping	205	1.43	150	1.05	355	2.48
Auto Pirn Winder (spl.)	10000	1.00	9000	0.90	19000	1.90

1	2	3	4	5	6	7
H.S. Sizing machine . . .	205	5.13	150	3.75	355	8.88
Plain loom (cotton) . . .	20500	6.15	12000	3.60	32500	9.75
Auto loom (cotton) . . .	20000	20.00	18000	18.00	38000	38.00
Processing/Finishing machinery (Value in crores) . . .		20.25		15.00		35.25
		132.57		133.90		266.47
Miscellaneous items, humidifi- cation, heating, lighting, power etc.		26.68		44.35		71.03
Total: (Rs. in crores)		159.25		178.25		337.50

NOTE.—Con. — Conventional; H.S. — High Speed.

II. REQUIREMENT OF WOOLLEN INDUSTRY DURING THIRD AND FOURTH PLANS

The installed capacity of the Woollen Industry is as under:—

		Installed capacity as on 1960
Woollen Spindle	..	52,174
Worsted spindle	..	1,00,428
Shoddy Spindle	..	11,925
Powerloom	..	2,640

Expansion requirement.—Expansion of the woollen industry has been frozen during the Third Plan period. The *per capita* consumption by the end of the Third Plan was estimated at 0.051 yard. It is now proposed to raise *per capita* consumption to 0.077 yard by the end of the Fourth Plan. For this, expansion of the worsted sector of the industry should be to the tune of 10,000 spindles and 300 looms.

Rehabilitation requirement.—Due to one reason or another it has not been possible to rehabilitate this industry to the extent necessary for the completion of the programme envisaged during the Third Plan with the result that a substantial part of the Third Plan programme has to be completed along with the Fourth Plan programme. Rehabilitation requirement of the woollen machinery has, therefore, been taken collectively for the Fourth Plan and the spill over portion of the Third Plan.

Taking into account all above the requirement during the Fourth Plan would be to the tune of Rs. 24.8 crores in terms of value. Details are shown in Table II in page No. 6.

III. REQUIREMENT OF SILK AND MAN-MADE FIBRE WEAVING INDUSTRY DURING THIRD AND FOURTH PLANS

Rehabilitation requirement.—A rehabilitation and modernisation programme for the man-made fibre weaving industry for implementing during the Third Plan period was drawn up at an estimated cost of about Rs. 12 crores on the basis of an installed capacity of 45,000 looms. Since then the prices of textile machinery have undergone considerable changes because of modern technological developments and general rise in prices. The cost of the same programme at current prices would be about Rs. 32 crores.

TABLE II

Requirement of Woollen Machinery During Third and Fourth Plans

Value based on 1963/64 FOB/Ex-Works Prices

Name of machine	Rehabilitation requirement of Third & Fourth Plan		Expansion requirement of Fourth Plan			Total	
	Units	Value Rs. crores	Units	Value Rs. crores		Units	Value Rs. crores
1	2	3	4	5		6	7

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**WORSTED SPINNING
MACHINERY**

Auto lever intersecting Gil Box.	63	0.27	8	0.03	71	0.30
Auto lever draw box . .	63	0.71	8	0.09	71	0.80
Open drawing finisher . .	126	0.49	16	0.06	142	0.55
Dandy reducer . . .	126	0.45	16	0.05	142	0.50
Dany rever	252	0.98	32	0.12	284	1.10
Worsted ring frame . .	189	2.96	25	0.39	214	3.35
(spindles in thousand) . .	(75.6)		(10.00)		(85.6)	
Worsted Twisting . . .	189	1.33	25	0.17	214	1.50
Winding machine . . .	63	0.27	8	0.03	71	0.30

WOOLLEN SPINNING MACHINERY

Willowing and oiling machine	31	0.17	..	..	31	0.17
Woollen carding set . .	62	1.90	..	..	62	1.90
Woollen ring frame . .	124	1.50	..	..	124	1.50
(spindles in thousand) . .	(25.0)				(25.0)	

SHODDY SPINNING MACHINERY

Rag tearing machine . .	10	0.05	..	..	10	0.05
Garnet machine . . .	10	0.10	..	..	10	0.10
Willowing and oiling machine	10	0.55	..	..	10	0.55
Shoddy ring frame . .	40	0.588	..	..	40	0.58
(spindles in thousand) . .	(8.0)				(8.0)	
Shoddy carding engine . .	20	0.65	..	..	20	0.65

WEAVING/PROCESSING MACHINERY

Sectional warping machine	150	0.90	..	0.20	150	} 1.10
Pirn winding machine (in					750	
spindles).	750	..	13 modern	..	13	
			units			

TABLE II—*contd.*

Name of machine	Rehabilitation requirement of Third & Fourth Plan		Expansion requirement of Fourth Plans		Total	
	Units	Value Rs. crores	Units	Value Rs. crores	Units	Value Rs. crores
1	2	3	4	5	6	7
Woollen/worsted loom	1500	3.46	300 .	1.54	1800	5.00
Finishing/processing/miscel- laneous machinery for felt comb- ing including carpet industry		0.50		6.50		7.00
	Total	17.82		9.18		27.00
Less to be completed during Third plan period		5.82		..		5.82
REQUIREMENT IN FOURTH PLAN:						
Machinery		12.00		9.18		21.18
Miscellaneous items, humidifi- cation, heating, lighting, etc.		1.80		1.84		3.64
	Total: (Rs. in crores)	13.80		11.02		24.82

Paucity of foreign exchange is one of the reasons for unsatisfactory progress of rehabilitation and modernisation of the man-made fibre weaving industry. Not all machines are available indigenously. A few of such items of machinery having no indigenous angle have been allowed import. It is desirable that by the end of the Third Plan period the aforesaid rehabilitation and modernisation programme be completed at least to the tune of Rs. 15 crores. This would leave a balance of Rs. 17 crores project which has to be completed during the Fourth Plan period. Considering the condition of the machinery, the decentralised nature of the party of the industry, its ability, etc., it is felt that although the present installed capacity of the loomage is about 67,000 if the aforesaid programme of rehabilitation costing Rs. 32 crores is completed by the end of the Fourth Plan period the industry would be rehabilitated to a reasonable degree.

The expansion programme of the man-made fibre weaving industry is under consideration and as soon as a decision on that is taken, the requirement of the machinery for carrying out its expansion would be worked out.

Table III below gives the requirement of machinery item-wise required for rehabilitation/modernisation of the industry.

TABLE III
*Requirement of Silk and Man-Made Fibre Weaving Machinery
During Third & Fourth Plans*

Name of machine	Value based on 1963/64 F. O. B./Ex-works prices	
	Rehabilitation requirement	
	Unit	Value in Rs. crores.
1	2	3
Rayon Yarn Twisting machine	50	0.03
Synthetic Yarn Twisting Machine	50	0.80
Fancy Yarn Twisting Machine	50	0.21
Automatic Pirn Winding machine (spindles)	7500	1.09
Cone Winding Machine (spindles)	2500	0.21

1	2	3
High Speed Sectional Warping machine	75	1.10
Sizing Machine	25	0.54
Warp Reaching Machine	50	0.01
Warp Knotting/Tying Machine	50	0.17
Reed and Heald Cleaning machine	50	0.08
Plain Loom	5000	1.87
Automatic Loom	8000	10.20
Special Type of loom	750	1.18
Jacquard Machine (Fine Pitch)	150	0.13
Card Punching Machine	25	0.04
Card Repeating Machine	25	0.02
Card Lacing Machine	25	0.01
Hosiery Machine	..	5.06
Knitting Machinery	..	1.01
Silk Machinery	..	0.50
Finishing/Processing Machinery	..	7.11
		32.00
Less to be completed in Third Plan	..	14.76
TO BE COMPLETED IN FOURTH PLAN		
Machinery	..	17.24
Miscellaneous items, humidification heating, lighting, power etc.	..	2.59
		19.83

SUMMARY

TABLE IV

Demand of Textile Machinery During Fourth Plan

Particulars	For rehabilitation/ modernisation (Rs. in crores)	For expansion (Rs. in crores)	Total (Rs. in crores)
1	2	3	4
Cotton textile machinery	132.57	133.90	266.47
Woollen machinery	12.00	9.18	21.18

1	2	3	4
Silk and Man-made fibre weaving machinery	17.24	(To be assessed)	17.24
			304.89
Add miscellaneous items, humidification, lighting, power etc.			77.26
			382.15
(Requirement of textile machinery Rs. 305 crores.)			

Indigenous production of machinery.—Table V below gives the production trend of major textile machinery manufactured indigenously since 1956.

TABLE V

Indigenous Production of Major (Complete) Textile Machinery

		Rs. in crores			Rs. in crores
1956	..	7.29	1960	..	10.39
1957	..	9.25	1961	..	11.39
1958	..	7.31	1962	..	14.00
1959	..	8.06	1963	..	19.00

Though the past performance of the indigenous manufacturers cannot be considered unsatisfactory, there still remains a very wide gap between the actual requirement and indigenous production. At present textile machinery worth about Rs. 25/30 crores are being imported every year. With a view to avoid a large drain of foreign exchange, it is necessary that its manufacture within the country is stepped up considerably. It is, however, expected that before the end of the Third Plan period the annual production would be in the neighbourhood of Rs. 30 crores. Certain factors are standing in the way of quicker development of the industry. There is a dearth of technically trained personnel and skilled labour which prevent the manufacturers from stabilising the volume of production. Unpredictable supply of raw materials like pig iron, coal, coke and shortage of materials like cement, steel and electricity aggravate the progress further.

Table VI gives the indigenous capacity created so far for the manufacture of major items of textile machinery, capacity gone into production and the current annual rate of production.

TABLE VI

Indigenous Capacity and Current Production

Sr. No.	Name of Machine	Capacity created		Capacity gone into production		Current annual rate of production	
		No. of parties	Annual Capacity held (in unit)	No. of parties	Annual capacity held (in unit)	1963	Jan/Sep. 1964
						(in units)	
1.	Blow Room Machinery	3	66	1	24	16	12
2.	Card	5	3130	4	2400	1590	1431
3.	Comber Set	1	60				
4.	Draw Frame Set	7	710	2	173	26	31
5.	Speed Frame	7	858	1	96	96	42
6.	Ring Frame	8	5236	5	2664	1990	1594
7.	H.S. Winding Machine	3	170	1	160	42	38
8.	H.S. Warping Machine	1	60	1	60	13	5
9.	Pirn Winding Spindle	3	3000	2	2400	516	204
10.	Sizing machine	4	104	2	64		21
11.	Plain Loom (Cotton)	5	5640	4	5040	1767	1904
12.	Auto Loom (Cotton)	4	5100	3	4500	3382	1362
13.	Plain Loom (Art Silk)	5	2280	4	2160	35	25
14.	Auto Loom (Art Silk)	1	600				
15.	Woollen Ring frame with preparatory (in Spindles)	2	10000	1	8000	1600	2800
16.	Finishing/Processing ma- chinery(Rs. in crores)	20	..	..	..	3.1	2.6
TOTAL		..	..	..	..	Rs.19 crs.	Rs.16 crs.

Indigenous manufacturing programme during Fourth Plan period.—As can be seen from Table VI the current annual rate of production of Major (complete) Textile Machinery is in the order of Rs. 20 crores. As has been mentioned earlier, it is expected that at the end of the Third Plan period, the production would come up to about Rs. 30 crores. The licensed capacity at present covered by the Major Textile Machinery Manufacturers is about Rs. 60 crores in terms of value. M/s. National Machinery Manufacturers, Bombay and M/s. Textile Machinery Corporation, Calcutta, have planned for expansion of their capacity. Taking this into account the capacity so far created would be in the neighbourhood of Rs. 60 crores. M/s. Lakshmi Machine Works, Coimbatore, a new-comer in this line, are going into production soon. M/s. Machino Textiles who proposed collaboration with Russia have made no progress so far.

It will be seen from Table VI above that idle capacity, may be in some cases beyond the control of the licencees, is high. It is, therefore, necessary to review the capacity of all the licencees, and wherever there is evidence to show that actual production is likely to be far below licenced capacity their capacity may be suitably revised. It is also desirable to weed out infructuous licencees.

It will also be seen that certain items of machinery like draw frames, speed frames, combers, winding and warping machines etc., are being manufactured in negligible numbers in spite of the fact that capacity has been created since long. Manufacturers seem to be reluctant to manufacture these of conventional design due, perhaps, to the fact that textile machinery has undergone considerable changes due to modern inventions which have profoundly altered the economy of the textile mill industry. The foreign manufacturers, it appears, are also not keen to part with their know-how. If, therefore, new inventions like High Speed Card, High Speed Draw Frame, High Speed Winding and Warping machines are to be manufactured in India, it would be necessary to induce the foreign collaborators to manufacture these items of machinery in our country by paying even higher royalty than is normally allowed for conventional/general textile machinery.

The major machinery manufacturers have now planned their production programme for the Fourth Plan period. They have planned to produce machinery worth Rs. 283 crores during the Fourth Plan period.

Experience shows that for one reason or another machinery manufacturers have not been in a position to reach their planned rate of production in the past. On realistic approach it has been estimated by the Group that the manufacturers would be in a position to manufacture machinery worth about Rs. 233 crores if their requirements of raw materials, components and also machine tools are met fully from indigenous and/or from imported sources; and in that event the gap between demand and supply would be to the tune of Rs. 72 crores.

Table VII gives the requirement of textile machinery during the Fourth Plan period, production plan of the machinery manufacturers as prepared by them and anticipated production on realistic basis.

TABLE VII

*Requirement and Indigenous Availability of Textile Machinery (Cotton, Woollen and Man-made Fibre Weaving)
During Fourth Plan Period*

Name of machinery	Requirement		Indigenous availability			
			As submitted by machinery manufacturers		On realistic basis	
	Units	Value (Rs. crs.)	Value Rs. crs.	Value (Rs. crs.)	Units	Value (Rs. crs.)
1	2	3	4	5	6	7
Blow Room machinery	476	19.04	346	13.84	260	10.40
Card	13225	31.08	10853(C) 3307(HS)	32.76	9918 (C) 3307(HS)	31.08
Comber Set	238	9.52	168	6.72	126	5.04
Draw Frame Set . .	1428	10.00	865	6.05	649	4.54
Speed Frame Set . .	2380	17.85	2456	18.42	1842	13.82
Ring Frame of 400 sps. each	14975	71.40	21685	104.08	14875 *(16264)	71.40 *(78.07)

*If all goes well, the ring frame manufacturers may be in a position to manufacture as per figures indicated in bracket. This additional production has not been accounted for in the anticipated production of indigenous machinery estimated at Rs. 233 crores during the Fourth Plan period. The excess production, however, could be utilised for meeting the short-fall during the Third Plan period.

1	2	3	4	5	6	7
H.S. Winding . . .	1258	11.32	1200	10.80	900	8.10
H.S. Warping . . .	355	2.48	300	2.10	225	1.57
Auto Pirn Winder (spl's).	19000	1.90	12000	1.20	9000	0.90
H. S. Sizing Machine . .	355	8.88	300	7.50	225	5.63
Plain Loom (Cotton) . . .	32500	9.75	25170	7.55	32500	9.75
Auto Loom (Cotton) . . .	38000	38.00	31500	31.50	38000	38.00
Processing/Finishing Machinery (Value in Rs. crs.) . . .	..	35.25		33.30		25.00
I. Cotton textile machinery		266.47		275.82		225.23
II. Woollen machinery . .		21.18		0.95		0.95
III. Man-made Fibre Weaving, Hosiery including silk machinery		17.24		6.67		6.67
Total (Rs. in crores) . .		304.89		283.44		232.85

The targeted annual rate of production, during the Fourth Plan period on realistic basis may, however, be taken as under:—

TABLE VIII
Production Programme

		(Rs. in crores)
1966-67	..	35
1967-68	..	41
1968-69	..	47
1969-70	..	53
1970-71	..	57
	TOTAL	<u>233</u>

Gap between anticipated demand and supply.—The anticipated production of the major items of machinery during the Fourth Plan period being Rs. 233 crores as against assessed demand of Rs. 305 crores, the net short-fall would be about Rs. 72 crores. The short-fall has to be met either by more indigenous production or by imports. Details are given in Table IX.

TABLE IX
Short-fall during Fourth Plan period

		(Rs. in crores)		
	Requirement	Availability	Gap	
I. Cotton textile machinery	266.47	225.23	41.24	
II. Woollen machinery	21.18	0.95	20.23	
III. Silk and man-made fibre weaving machinery.	17.24	6.67	10.57	
	<u>TOTAL</u>		304.85	232.85
			72.04	

Requirement of imported Components and raw materials for the major machinery manufacturers.—Indigenous capacity has already been created for almost all items of textile components. There are a few isolated items which are not likely to be taken up for manufacture because of economic reasons. Hence some components have still to be imported; so also some raw materials.

It has been estimated that the existing manufacturers during the Fourth Plan period would need imported components and raw materials on an average to the extent of 15% of their value of production the present requirement being about 25%. Since their expected production during the Fourth Plan period is Rs. 233 crores, their requirement of imported components and raw materials would be about Rs. 35.5 crores. Details are given in Table X below:

TABLE X
Requirement of imported components/raw materials
(based on present Design)

(Rs. in crores)

Year	Value of planned production	Requirement of component/raw material	Requirement in %
1966-67	35	6.30	18
1967-68	41	7.38	18
1968-69	47	7.05	15
1969-70	53	7.95	15
1970-71	57	6.84	12
TOTAL	233	35.52	

Requirement of imported sub-components/raw materials for the spares/accessories/components manufacturers.—Spares and accessories/components manufacturers including about 300 units falling under S.S.I. Sector produced in the year 1962 goods worth Rs. 16 crores and in the year 1963 about Rs. 20 crores. Recently additional capacities have been created for almost all the items of spares and accessories/components required by the machinery manufacturers as well as mill industry. For meeting the increasing demand during the

Fourth Plan period, it has been estimated that the textile ancillary industry should increase their production gradually for reaching the targeted rate of production of Rs. 30 crores annually by the end of the Fourth Plan period. Table XI below gives the envisaged production programme of the spares and accessories/components manufacturers:

TABLE XI

Production Programme of spares and accessories component manufacturers

(Rs. in crores)

Year	By the major machinery manufacturers	By S.S.I. Sector (estimated)	TOTAL
1966-67	8.5	13.5	22
1967-68	9.0	15.0	24
1968-69	9.0	17.0	26
1969-70	9.5	18.5	28
1970-71	9.5	20.5	30
TOTAL	45.5	84.5	130

Textile ancillary manufacturers also require imported semi-finished components/raw materials for manufacturing spares and accessories/components; their requirement has been estimated at the rate of about 15% of the value of production which works out to Rs. 19.5 crores.

Summing up for producing major (complete) machinery worth Rs. 233 crores and spares and accessories/components valued at Rs. 130 crores the requirement of imported components and raw materials would be as in Table XII under:

TABLE XII

Requirement of imported components/raw materials

(Rs. in crores)

	Value of production	Imported component/raw material
1. Major Machinery manufacturers.	233	35.52
2. Spares/accessories manufacturers.	130	19.50
TOTAL	363	55.02

Requirement of machine tools.—To increase their production the machinery manufacturers have to install in their works machine tools. Only then they would be in a position to fulfil their target of production. There are a number of machine tools that are not available indigenously today. They have therefore to be imported. The requirement of machine tools during the Fourth Plan period both indigenous and imported on the basis of present indigenous availability is given in Table XIII below:

TABLE XIII

Requirement of machine tools

(Rs. in crores)

Year	Indigenous	Imported	TOTAL
1966-67	1.50	3.25	4.75
1967-68	1.00	2.00	3.00
1968-69	1.00	1.50	2.50
1969-70	0.75	1.00	1.75
1970-71	0.75	0.50	1.25
TOTAL	5.00	8.00	13.00

For achieving the targeted rate of production during the Fourth Plan period the Textile Machinery Manufacturers would require the following quantity of pig iron, coal, coke and power as indicated in Table XIV. The following table also gives the requirement of railway wagons for transport of goods from factory side to consuming mills.

It has been brought to the notice of the Group that the quality of pig iron and coke supplied to the textile machinery manufacturing industry is not conducive enough to manufacture quality products. The Group therefore recommends that graded pig iron and good quality coke with low ash content be made available to the textile machinery manufacturing industry. It is further suggested that to ensure regular supply of pig iron, coke and power to textile machinery manufacturing industry, it be given a higher position in the priority list for allocation of the same.

TABLE XIV

Requirement of Pig iron, coke, power and wagon

Year	Pig iron (M. Ton in lakh)	Coke (M. Ton)	Power (K.W.)	WAGON		
				Open (in unit)	Closed (in unit)	TOTAL (in unit)
1966-67	0.65	26,000	26,000	5,400	3,500	9,300
1967-68	0.70	28,000	31,000	5,600	4,300	9,900
1968-69	0.75	30,000	33,000	5,600	4,500	10,100
1969-70	0.80	31,000	35,000	5,900	4,800	10,700
1970-71	0.85	32,000	36,000	6,000	4,900	10,900

ANNEXURE A

COMPOSITION OF THE WORKING GROUP—VIII ON
TEXTILE MACHINERY

- | | |
|--|-----------------|
| 1. Shri R. Doraiswamy,
Textile Commissioner,
Bombay. | <i>Chairman</i> |
| 2. Shri G. C. L. Joneja,
Jute Commissioner,
1-8, Mission Row Extension,
Calcutta. | <i>Member</i> |
| 3. Shri I. B. Dutt,
Industrial Adviser & Ex-officio,
Jt. Textile Commissioner, Bombay. | „ |
| 4. Shri Prabhu Mehta,
Chairman,
Textile Machinery Manufacturers Association, 87, Veer Nariman Road,
Bombay. | „ |
| 5. Shri K. M. D. Thackersey,
Managing Director,
Thackersey Group of Mills,
Bombay. | „ |
| 6. Shri Surendra M. Mehta,
Ambika Silk Mills, Haines Road,
Bombay-13. | „ |
| 7. Shri S. A. Kher,
Calico Mills, Ahmedabad. | „ |
| 8. Shri S. C. Kela,
General Manager,
Britannia Engg. Co. Ltd.,
Titaghur (W. Bengal). | „ |

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| 9. Shri W. Luney,
Director/Works Manager,
Lagan Jute Machinery Co. Ltd.,
24, B Park Street, Calcutta. | <i>Member</i> |
| 10. Shri I. L. Tripathi,
Jute Mill Superintendent,
Macleod & Co.,
3, Netaji Subhas Road, Calcutta. | ” |
| 11. Shri A. B. Mallick,
Development Officer (I.M.II Dte.),
Director General of Technical Development,
Udyog Bhavan,
New Delhi. | ” |
| 12. Shri Harbans Singh,
Deputy Secretary,
Deptt. of Heavy Industries,
Ministry of Steel & Heavy Industries,
New Delhi. | ” |
| 13. Dr. B. N. Bhargava,
Director (Perspective Planning Division),
New Delhi. | ” |
| 14. Shri Hari Bhushan,
Director (Industry),
Planning Commission,
New Delhi. | ” |
| 15. Shri J. M. Srivastava,
Director, Ancillary Division,
Office of the Development Commissioner,
Small Scale Industries,
New Delhi. | ” |
| 16. Shri R. K. Rakshit,
Director of Textile Machinery,
Office of the Textile Commissioner,
Bombay. | <i>Convenor</i> |

ANNEXURE B

Terms of Reference

- (i) To make an estimate of the requirements of equipment falling within the scope of the Working Group, having regard to the production programmes and investment in the Sectors requiring such equipment envisaged during the Fourth and Fifth Plans, in so far as they are relevant to the establishment of capacity for the manufacture of such equipment during the Fourth Plan. In making this estimate, the requirements of replacement and possibility of exports should be taken into account.
- (ii) To make an analysis of these requirements, in terms of category of equipment and value.
- (iii) To work out in detail the requirements of each category of equipment, by type and by range, during each of the years of the Fourth Plan.
- (iv) To recommend the capacity and production targets for 1970-71, for each category of equipment, by type and by range, to the extent indigenous manufacture considered feasible and desirable.
- (v) To make an assessment of the production capacity of existing and projected manufacturing facilities and to work out the gaps for each category of equipment.
- (vi) To investigate the best manner in which the gaps could be covered, to the extent feasible and desirable by the end of the Fourth Plan; and to make specific proposals to this end, by way of expansion or new projects, etc.
- (vii) To make an estimate of the investment and foreign exchange on capital and maintenance account required for implementing the production programmes as recommended.
- (viii) To make an estimate of power, fuel, transport and other requirements of a significant order.
- (ix) To make an estimate of raw materials, components, etc., required for the manufacture of such equipment and to suggest measures for the indigenous manufacture of such items.

- (x) To recommend measures by which utilisation of manufacturing capacity and programmes of production in the consuming sectors and co-ordinated to the fullest extent.
- (xi) To suggest provision for 1964-65 for advance action in regard to Fourth Plan projects.
- (xii) To make such other recommendations as may be relevant.

ANNEXURE C

Composition of the Sub-Group on Cotton, Woollen, Silk & Art Silk Machinery

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| 1. Shri I. B. Dutt,
Industrial Adviser & Ex-officio,
Joint Textile Commissioner,
Office of the Textile Commissioner,
Bombay. | <i>Chairman</i> |
| 2. Shri Prabhu V. Mehta,
Chairman,
Textile Machinery Manufacturers
Association, 87, Veer Nariman Road,
Bombay. | <i>Member</i> |
| 3. Shri L. T. Gholap,
National Machinery Manufacturers Ltd.,
Thana, Bombay. | " |
| 4. Shri H. J. Save,
Machinery Manufacturers Corpn. Ltd.,
Gateway Building, Apollo Bunder,
Bombay. | " |
| 5. Dr. B. N. Bhargava,
Director (Perspective Planning Division),
Planning Commission,
New Delhi. | " |
| 6. Shri H. N. Satyanarayana,
Dy. Director (Supply & Transport),
Office of the Textile Commissioner,
Bombay. | " |

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| 7. Shri D. Balasubramaniam,
Managing Director,
Textool Co. Ltd.,
313, Avanashi Road,
Coimbatore. | <i>Member</i> |
| 8. Shri J. C. Aggarwal,
General Manager,
Texmaco, Belgharia,
West Bengal. | " |
| 9. Shri B. G. Kakatkar,
Secretary General,
Indian Cotton Mills' Federation,
Elysium Mansion, Colaba Causeway,
Bombay-5. | " |
| 10. Shri R. K. Rakshit,
Director of Textile Machinery,
Office of the Textile Commissioner,
Bombay. | <i>Member-Secretary</i> |

Composition of Sub-Group on Jute Machinery

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|---|-----------------|
| 1. Shri A. C. Nandi,
Industrial Adviser,
Office of the Jute Commissioner,
P-8, Mission Row Extension,
Calcutta. | <i>Chairman</i> |
| 2. Shri I. L. Tripathi,
Jute Mill Superintendent,
Macleod and Company,
3, Netaji Subhas Road,
Calcutta. | <i>Member</i> |
| 3. Shri W. Luney,
Director/Works Manager,
Lagan Jute Machinery Co. Ltd.,
24-B, Park Street,
Calcutta. | " |
| 4. Shri Hari Bhushan,
Director (Industry & Mineral Division),
Planning Commissioner,
New Delhi. | " |

5. Shri A. B. Mallik, *Member*
Development Officer (I.M. II Dte.),
Director General of Technical Development,
New Delhi.
6. Shri A. K. Mitra, *Member-Secretary*
Assistant Director,
Office of the Jute Commissioner,
P-8, Mission Row Extension,
Calcutta.
7. Shri W. H. S. Jebb, *Member*
Director,
Lagan Jute Machinery, Co. Ltd.,
24-B, Park Street,
Calcutta.
8. Shri S. C. Kela,
General Manager,
Britannia Engg. Co. Ltd.,
Titaghur, West Bengal.

PART II

SUMMARY REPORT OF THE WORKING GROUP VIII ON TEXTILE MACHINERY

REQUIREMENT & INDIGENOUS AVAILABILITY OF JUTE TEXTILE MACHINERY DURING THE FOURTH PLAN PERIOD.

Target of jute goods & basis of calculation.—The production of jute goods by 1970-1971 has been assessed at 17 lakh tonnes and its break-up figures are as given below:—

	Target production 1970-71 (1000 tonnes per year)
Hessian	663
Sacking	701
Carpet Backing	193
Others	143
	1700 i.e., 17 lakh tonnes

Production by the end of the Third Plan Period has been fixed at 13 lakh tonnes. Requirement of machinery, therefore, for expansion will be in respect of 4 lakh tonnes. The basis of calculations has been shown in *Appendix A-1*.

Requirement of machinery for modernisation & expansion during the Fourth Plan Period.—The requirement of machinery for modernisation and for expansion, as earlier given in *Appendix A-3* has been reviewed. While reviewing the position, consideration has been given to (a) the development that has meanwhile taken place in the manufacture of jute mill machinery, (b) import and production that have taken place up to September, 1964, and (c) import & production likely to take place by March, 1966.

Accordingly, the requirement of main items of machinery during the fourth plan period is now valued at Rs. 345.403 million (against Rs. 458.888 million estimated earlier). The break-up by number and money value are given in *Appendix 'B'*.

Indigenous availability.—The indigenous availability of the machines have also been given in the said Appendix. It would be seen that the shortfall is in respect of Cards and Cop-Winder of the Schweiter type. It is, however, very likely that M/s. Lagan Jute Machinery Co. (P) Ltd., Calcutta will also undertake manufacture of Cards and there would be no gap.

For Cop Winder of Schweiter type, the gap is of the order of Rs. 3.762 million per annum only. Efforts, however, are being made to produce this machine also in the country in collaboration with M/s. Schweiter & Co., Switzerland.

Requirement of foreign exchange.—The requirement of foreign exchange for manufacture of jute mill machinery (including spares, stores & accessories) are given in *Appendix 'F'*. It is worth Rs. 76.23 million. This figure does not take into account the foreign exchange needed for diversification and specialised items of machinery, for an estimate of Rs. 15 million per annum (Rs. 75 million during the plan period) has been indicated earlier.

Requirement of pig iron, coke & steel.—The requirement of pig iron, coke and steel have been shown in *Appendix 'C'*. The basis of estimate has also been shown in the said Appendix.

APPENDIX A I

Basis of calculations in the requirement of modern machinery during Fourth Plan Period

		Target production 1970-71 (1000 tonnes per year)
Hessian		663
Sacking		701
Carpet Backing		193
*'Others'		143
TOTAL		1700 i.e., 17 lakh tonnes per year

Category of machinery	Basis	Nos. of looms required to meet target produc- tion
1	2	3

1. LOOMS:

(a) Standard Hessian	1.00 tonnes per month working 200 hours.	55,250
(b) Standard Sacking	2.25 tonnes per month working 200 hours.	25,963
(c) Carpet backing	5.00 tonnes per month working 600 hours.	3,217
- No. of spindles required
on single shift basis.
2. *OTHERS:

Fine yarn	0.78 lbs. per spindle per hour (4½"pitch silver spinning frame).	1078 × 100
Coarse yarn	1.50 lbs. per spindle per hour (5½"pitch silver spinning frame).	316 × 80
3. SILVER SPINNING:

(a) 4½" pitch	17.6 fine yarns spindle per loom (Hessian & Sacking) on shift to shift basis.
(b) 5½" pitch	6.8 coarse yarns spindles per sacking loom on shift to shift basis.
4. PREPARING:

(a) Fine Side	1400 fine spindles per fine unit of preparing machinery which consists of:
	4/5—Softener
	2—Breaker Cards
	3—Finisher Cards
	2—First drawings
	2—Second Drawings
	3—Finisher Drawings

1	2	3
(b) Coarse side	In case of standard Sacking loom, 480 Coarse spindles and in case of 'Others' 720 Coarse spindles per coarse unit of prepar- ing machinery which consists of 2/3—Softener 1½—Teaser Cards 2—Breaker Cards 3—Finisher Cards 3—First Drawings 3—Finisher Drawings	
5. WINDING:		
(a) Roll/Cone Winders:		
(i) High speed Scroll type	0.42 spindle per Standard Hessian loom 0.85 spindle per Sacking loom and 0.85 spindle per Carpet Backing loom	} Considered for 50% of the total requirement of Warp yarns.
(ii) Traverse Bar type	1.1 spindle per Standard Hessian loom 2.0 spindles per Sacking loom and 2.2 spindles per Carpet Backing loom	
(b) Cop Winders:		
(i) High speed Auto-doff- ing Horizontal type	1.25 spindles per Carpet Backing loom	} Considered for Carpet backing looms only.
(ii) High speed Auto-doff- ing Vertical type	0.86 spindle per Standard Hessian loom	
(iii) Ordinary type	1.84 spindles per Standard Hessian loom	} Considered for 50% of the requi- rement for stan- dard Hessian loom.
	2.0 spindles per Standard Sacking loom	
6. WARPING: 120 Standard Hessian looms per machine (Pre-beamers) and 60 Carpet Backing looms per machine		
7. SIZING (DRESSING):		
for 9 cylinders, 100 Carpet Backing looms per machine 142" cylinder width		
for 9 cylinders 100 Standard Hessian looms per machine 63" cylinder width		

NOTES.—(a) The above rates are given on the basis of single shift working of the machinery to single shift working of the looms.

In calculating the requirements of the machinery to achieve target production it is considered that all machinery from preparing to dressing point will work on three shifts, *i.e.*, the total requirement on single shift basis.

In addition to above 10% allowance has also been provided for as an allowance for allocating the machinery to different working units of the industry.

- *(b) For the production of 'others' the requirement of machinery up to the spinning stage of production only has been estimated. Out of 143,000 tonnes under 'others', fine yarn has been estimated at 89,677 tonnes and coarse yarn at 3,381 tonnes. The rest are in the form of roves for which necessary equipments are already available in the industry.
- (c) The Working Time Agreement of the Indian Jute Mills Association has been abrogated since February, 1964. The jute mills could now work their installed looms on multiple shifts. The spindles entitlement permitted under the Industries (Development and Regulation) Act, 1951 have been intimated to the units by the Jute Commissioner. The installation of spindles and ancillary machinery would be permitted on the basis that working 2 shifts the preparing and spinning machinery would feed looms working on single shift. In addition a 20% cushion over and above these figures would also be allowed to be installed. Taking advantage of this, it is possible that certain mill units may like to install additional equipment. For the purpose of the above calculation no provision has been made to cover this factor. The basis of preparing spinning machinery calculation adopted is that spindles and ancillary preparing and spinning machinery would work 3 shifts to feed looms on single shift. It is the considered opinion of this group that for the purpose of the present assessment this would be sufficient inasmuch as installation of equipment on double shift basis would entail blocking up of finance, which would be difficult for the industry.

APPENDIX B

Requirement and indigenous availability of major items of Jute Textile Machinery during the Fourth Plan Period

Sl. No.	Nomenclature of Machinery	Requirement				Indigenous Availability (On realistic basis)				Remarks
		Rehabilitation/Modernisation		Expansion		Total				
		By Nos.	By Value Rs./million	By Nos.	By Value Rs./million	By Nos.	By Value Rs./million	By Nos.	By Value Rs./million	
PREAPRATORY AND SPINNING										
1.	Carding Machinery	1174	77.362	74	4.898	1248	82.260	240	*16.050	
2.	Drawing Frames .	816	31.022	423	18.039	1239	49.061	1,700	67.315	
3.	Silver Spinning Frames.	1651	86.252	1102	56.886	2753	143.138	3,200	166.378	
POST SPINNING										
4.	Roll/Cone Winding .	157	4.377	75	2.232	232	6.609	348	9.913	
5.	Cop Winding .	511	17.196	191	6.264	702	23.460	131	†4.652	
6.	Prebeamer .	26	3.380	51	6.630	77	10.010	110	14.300	
7.	Dressing .	63	7.875	9	3.600	72	11.475	110	17.531	
8.	Carpet Backing Loom.	..	..	429	19.390	429	19.390	645	29.152	
TOTAL		Rs. 227.464 million		Rs. 117.939 million		Rs. 345.403 million		Rs. 325.291 million		

* This gap (worth Rs. 66,210 million) in respect of Cards is very likely to be covered by expansion and/or, another existing unit undertaking the manufacture Cards.

† Efforts, however, are being made to cover this gap (worth Rs. 18,808 million) by producing this machine of schweitzer type in the country in collaboration with a foreign firm.

APPENDIX C

Requirement of Raw material for Jute Textile Machinery Industry during the Fourth Plan Period

Sl No.	Nomenclature of machinery	No. of machine	Weight in Tonnes	Requirement of Raw Material		
				Pig Iron (Tonnes)	Coke Tonnes	Steel (Tonnes)
PREPARATORY SPINNING						
1.	Carding Machinery . .	1,248	10,891	11,440	3,417	1,865
2.	Drawing Frames . . .	1,700	9,083	9,863	2,925	1,832
3.	Silver Spinning Frames .	3,200	24,595	19,573	5,888	9,759
POST SPINNING						
4.	Roll/Cone Winding . . .	348	1,108	1,095	347	367
5.	Cop Winding	702	1,920	1,842	591	646
6.	Prebeamcr	110	390	369	123	113
7.	Dressing	110	869	658	220	399
8.	Carpet Backing Loom . .	645	5,244	4,974	1,658	1,509
TOTAL			54,100 (Tonnes)	49,814 (Tonnes)	15,169 (Tonnes)	16,490 (Tonnes)

Basis:—

1. Raw material weights calculated with a 15% machining allowance.
2. In case of Pig Iron, a melting and foundry loss at 10% has been presumed.
3. Casting yield has been estimated at 60% and a coke to metal ratio at 1:5.

APPENDIX F

Requirement of Foreign Exchange for Jute Textile Machinery Industry during the Fourth Plan Period

1. For components/Raw materials for the major machinery manufacturers for manufacturing Rs. 345 million worth of machinery as under:

Year	Production of machinery Rs./million	Requirement of Components/ Raw material		
		(%)	Rs./million	
1956-67	49	20%	9.80	
1967-68	59	20%	11.80	
1968-69	79	15%	11.85	
1969-70	79	12%	9.48	
1970-71	79	10%	7.90	50.83
	<u>Rs. 345 million</u>			
2. For Components/Raw Material for the Jute Textile ancillary manufacturers for manufacturing Rs. 184 million worth of Accessories and Spare/Stores, at 10%.				18.40
3. For Capital Equipment for manufacturing Jute Textile Machinery.				7.00
TOTAL				Rs. 76.23 million