

PH-AR-0-326  
FORESTRY PLANNING AND DEVELOPMENT PROJECT 95317

## CONSULTANCY REPORT

### WOOD USE IN THE PLYWOOD INDUSTRY OF PAKISTAN

By

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Under Contract to:  
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Islamabad, Pakistan

for the  
Government of Pakistan  
and  
United States Agency for International Development

March 1991

## **ACKNOWLEDGEMENTS**

The authors are grateful to Mr. Abceedullah Jan, Inspector General of Forests, for this study. The assistance of Raja M. Zarif, Assistant Professor of Forestry and Mr. Mohammad Yasin, Composite Wood Officer, Pakistan Forest Institute in conducting this study is gratefully acknowledged. The co-operation of all plywood manufacturing units in Pakistan who willingly provided information is highly appreciated by the authors.

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## EXECUTIVE SUMMARY

At the time of creation of Pakistan there was not a single plywood unit operating in the country. The first unit went into production in 1954 at Karachi. The raw material for this unit came from the forests of both East and West Pakistan. The total production of this unit during 1957 was estimated at 94,700 m<sup>2</sup> for which about 1000 m<sup>3</sup> of wood was consumed. Teak, shisham, bahan, mango, civit, chapalish and semal were used for plywood manufacture. It took almost eleven years to establish another plywood unit in the country. At present, seventeen units are manufacturing plywood and allied products. The total installed capacity of 16 units is about 1,576,600 m<sup>2</sup> of plywood per shift excluding allied products. Presently these are producing 831,600 m<sup>2</sup> of plywood per annum. The total capacity utilization thus works out to be 52.8 percent.

The total wood consumption of the surveyed 16 units is estimated at 15,408 m<sup>3</sup> during 1988-89. In addition 7368 m<sup>3</sup> of wood was also imported for plywood manufacture during the same year. The common local species used for plywood and allied products manufacture are deodar and fir amongst coniferous and shisham, mango, semal and hybrid poplar amongst broadleaved species.

Plywood is also being regularly imported every year in the country since its creation. However, the quantity of imports varied considerably over the years to year. For instance, 224,000 m<sup>2</sup> of plywood were imported in 1975-76, reached maximum of 408,000 m<sup>2</sup> in 1980-81 and then dropped down to only 57,000 m<sup>2</sup> in 1988-89. A maximum amounts of Rs.14.1 million was spent in 1981-82 for this purpose.

The total projected production of plywood is estimated at about 1,129,800 m<sup>2</sup> in 1991-92. The annual wood requirement for the same year is about 31,520 m<sup>3</sup>. The current whole sale price of plywood is Rs.46.81 per m<sup>2</sup>. The total employment of the surveyed plywood units is about 1,114 person per annum.

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## CHAPTER-I

### INTRODUCTION

The principal disadvantages of solid wood as structural material is its heterogeneity and anisotropy and absorptive capacity for water and vapors causing poor dimensional stability. These disadvantages in wood can be overcome to a large extent by cross banding the wooden pieces or veneers in a panel. This cross banded structure made up of veneers assembled by gluing is called plywood. In addition to dimensional stability another advantage of plywood is that by the production of veneer and gluing it into plywood, defects inherent in solid wood are very well distributed in a panel, resulting in minimizing their effect on various properties. Plywood if properly made and used can also help in conserving good quality wood resources.

Plywood exists in different forms such as multiply construction, blockboard, battenboard, laminboard, composite board and hollow core plywood such as flush doors. In Pakistan, 17 plywood manufacturing units are presently in operation. The units are not designed to manufacture specific type of plywood, therefore, their production generally includes multiply construction, blockboards, laminboards, hollow core plywood (flush doors) and composite boards. The composite boards in Pakistan are generally named veneboards and are not the specialty of plywood

industry only. Some furniture manufacturing units purchase the veneers and particleboard panels separately and glue them together to produce veneerboard. Similarly some particleboard manufacturers purchase veneer from plywood manufacturers and produce veneerboards.

Because of limited water and moisture resistant properties of local plywood, considerable quantities of this commodity are imported to meet the domestic needs. Further, the locally manufactured plywood has poor properties because it is not manufactured according to the national or international standards. The shortage of plywood production in the country compels the consumers to use whatever is available. The users are also not aware of the properties of plywood for specific end uses. On the other hand, local manufacturers do not have trained workers and hence are unaware of modern quality control techniques. Under the circumstances, the commercial plywood bonded with urea formaldehyde is used in all interior and exterior applications in bath rooms and cabinet making as well as in structures (flush doors, panelling, partitions) which are fully or semi exposed to atmospheric conditions. In these applications the plywood delaminates and gets bad name for the product. The veneers made from wood species susceptible to termite or fungal attack are not treated with preservatives before they are glued and assembled into plywood. As a result the plywood products get damaged by termites during service. The defective manufacturing and wrong applications hinder

the popularity of the product. Further, it is more expensive than solid wood.

In order to extend use of plywood in the country for conserving wood resources of valuable tree species, the product quality should be improved and its cost should be reduced by the plywood manufacturers.



## **CHAPTER-II**

### **OBJECTIVE AND SCOPE**

#### **2.1 Objective**

To determine past, present and future wood consumption in plywood industry.

#### **2.2 Methodology**

Presently, there are 17 plywood manufacturing units in the country. It was thus decided to collect data from all the units. All units except M/S Bombay Plywood Industry, Rawalpindi, provided the requisite information. The latter did not supply data inspite of repeated personal visits and requests. Further, two units are either not functioning or closed. Therefore, data presented in this report consist of 16 units only. A list of the plywood units is given in Appendix-I.

#### **2.3 The Questionnaire**

A preliminary questionnaire for this study was provided by Winrock International, Islamabad. The questionnaire was pre-tested. In the light of results of pre-testing, the original questionnaire was modified. A copy of each of the original and modified questionnaire is given in Appendix-II and III respectively.

## 2.4 Data Collection

All the operating units were mailed the revised questionnaire in July, 1990. Not a single unit responded till September 15, 1990. Therefore, all units were visited personally to collect data. As mentioned above, only one unit out of seventeen refused to supply any information which is therefore not included in the data presented in this report. Further, detailed data according to the questionnaire were provided by the industry as records of the same were not maintained by them.

## CHAPTER-III

### SUMMARY OF RESPONSES TO THE QUESTIONNAIRE

3.1

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#### 3.2 Name and Address of the Firms

All the surveyed units provided information regarding their trade name, address and year of establishment. The data of all units are given in Table 1. Out of 16 units, 6 units are located in Karachi. Further, most of units were established in the eighties.

Table 1. Name and location of the plywood units.

S.No.	Name of units	Location	Year of Establishment
1.	K.D.C. Plywood Industry	Jhelum, Punjab	1965
2.	National Plywood Industry	Lalamusa, "	1967
3.	Green Wood Working Industry	Lahore, "	1980
4.	Premier Plywood Industry	Lahore, "	1980
5.	Mughal Plywood Industry	Rawalpindi, "	1986
6.	Shalimar Plywood Industry	Faisalabad, "	1971
7.	Hattar Plywood Industry	Hattar, N.W.F.P.	1988
8.	Timber Center Plywood Industry	Rawalpindi, Punjab	1986
9.	Lyallpur Plywood Industry	Faisalabad, "	1978
10.	Sadiq Plywood Industry	Kalashah Kaku, "	1971
11.	Sunlight Plywood Industry	Karachi, Sindh	1985
12.	Oosman Brothers Plywood Industry	" "	1968
13.	Aman Wood Working Industry	" "	1985
14.	Tropical Wood Working Industry	" "	1982
15.	Fancy Veneer and Plywood Industry	" "	1985
16.	Central Forest Products Industry	" "	1986

### 3.3 Installed Capacity

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All units provided information about their installed capacity for single shift production of plywood. The total installed capacity of the plywood industry at the time of survey was estimated at 1,576,600 m<sup>3</sup> per shift. The installed capacities of the individual units is given in Table 2. However, this does not include their production capacity for allied products such as blockboard, laminboard, flushdoors and veneers as the data for the same were not provided by the plywood manufacturers. All the units are small to very small as far as their installed capacity production is concerned. Such units would not be economical to operate in many countries which produce significant quantities of plywood. The minimum production level for efficient and economic operation is considered to be about 25 m<sup>3</sup> (6250 m<sup>2</sup>) per day or 7500 m<sup>3</sup> (1.875 million m<sup>2</sup>) of plywood per annum.

Table 2. Installed capacity of plywood units for single shift.

S.No.	Name of unit	Installed capacity (000 m <sup>2</sup> )	Operated No. of shifts
1.	K.D.C. Plywood Industry	464.5	3
2.	National Plywood Industry	100.0	2
3.	Green Wood Working Industry	1.8	2
4.	Premier Plywood Industry	1.0	1
5.	Mughal Plywood Industry	1.2	1
6.	Shalimar Plywood Industry	94.6	2
7.	Hattar Plywood Industry	1.0	1
8.	Timber Center Plywood Industry	1.5	1
9.	Lyallpur Plywood Industry	56.0	2
10.	Sadiq Plywood Industry	276.5	1
11.	Sunlight plywood Industry	200.0	1
12.	Oosman Brothers Plywood Industry	73.0	1
13.	Aman Brothers Plywood Industry	56.0	1
14.	Tropical Wood Working Industry	94.7	1
15.	Fancy Veneer and Plywood Industry	1.8	1
16.	Central Forest Products Industry	152.0	1
Total		1,576.6	22

All the units reported that they could operate for three shifts. However, the actual number of shifts operated is given in Table 2, which show that most of the units operated on single shift basis. Only one unit worked on 3 shifts and 4 units on double shifts basis. Thus installed capacity was not utilized to the fullest extent.

The average number of operating days of the industry was found to be 302 days, out of which 286 days were effective operating days. These figures indicate reasonable working conditions in the plywood industry.

### 3.7 Annual Production

All the firms provided data about their plywood and allied products production for three years. Most of the large units manufacture blockboard, laminboard, veneer and flush doors in addition to plywood. The total production of all products of 16 units for the last three years is given in Table 3 and the actual production of individual units in respect of plywood only is given in Table 4. Whereas plywood production slightly increased over three years period, the production of other products especially veneers showed a fluctuating trend during this period.

Table 3. Production of plywood units for 1986-87 to 1988-89.  
(000 m<sup>2</sup>)

Year	Plywood	Block-board	Lamin-board	Flush door	Veneer	Total Common Ply-wood Equivalent*
1986-87	706.4	61.7	10.4	197.5	975.5	2418
1987-88	737.2	65.3	35.9	188.7	188.7	2578
1988-89	831.6	58.6	34.4	296.5	287.2	3305

\* 1 m<sup>2</sup> blockboard, laminboard or flush door = 6.35 m<sup>2</sup> of plywood.

Some of the units listed in Tables 2 and 4 produce only a very small quantity of plywood. In such cases, either the manufacturing facility is very small or their principal product is other than plywood. Besides plywood, manufacture of flush doors and veneers are the major products of the industry.

Table 4. Production of plywood of surveyed unit.

Sl. No.	Name of unit	(000 m <sup>2</sup> )		
		Production		
		1986-87	1987-88	1988-89
1.	K.D.C. Plywood Industry	83.9	77.7	126.5
2.	National Plywood Industry	60.5	47.7	65.3
3.	Green Wood Working Industry	18.1	18.2	18.3
4.	Premier Plywood Industry	8.5	8.5	8.5
5.	Mughal Plywood Industry	0.1	0.2	0.2
6.	Shalimar Plywood Industry	66.3	71.0	71.0
7.	Hattar Plywood Industry	-	0.2	0.2
8.	Timber Center Plywood Industry	0.2	0.3	0.3
9.	Lyallpur Plywood Industry	37.0	40.2	42.8
10.	Sadiq Plywood Industry	128.0	146.8	152.2
11.	Sunlight Plywood Industry	124.6	138.3	151.6
12.	Oosman Brothers Plywood Industry	55.3	58.0	60.0
13.	Aman Wood Working Industry	38.0	39.9	41.5
14.	Tropical Wood Working Industry	67.0	72.0	75.0
15.	Fancy Veneer and Plywood Industry	18.1	18.2	18.3
16.	Central Forest Products Industry	-	-	-s
Total		706.4	737.2	831.6

### 3.8 Actual Wood Consumption

The manufacturers provided data regarding actual quantity of wood consumed by their units during last three years. On an average, the total annual wood consumption of plywood industry was estimated at 19,600 m<sup>3</sup>. This also includes quantity of imported timber of teak, keruing and other mixed species, which is used for manufacture of plywood. These timbers are imported from South-east Asian countries. As far as supply of local timber is concerned, it is mostly obtained from tree growth on private farmlands. The actual wood consumption of individual units is given in Table 5.

Table 5. Actual wood consumption (m<sup>3</sup>) of plywood units.

Sl. No.	Name of unit	Wood consumption		
		1986-87	1987-88	1988-89
1.	K.D.C. Plywood Industry	2121	1845	2673
2.	National Plywood Industry	385	320	420
3.	Green Wood Working Industry	1845	1870	2060
4.	Premier Plywood Industry	1000	1000	1062
5.	Mughal Plywood Industry	571	715	1150
6.	Shalimar Plywood Industry	743	1471	1614
7.	Hattar Plywood Industry	-	571	787
8.	Timber Center Plywood Industry	715	857	1143
9.	Lyallpur Plywood Industry	599	672	810
10.	Sadiq Plywood Industry	1200	1550	1750
11.	Sunlight Plywood Industry	4285	4285	4285
12.	Oosman Brothers Plywood Industry	1034	1200	1950
13.	Aman Wood Working Industry	601	660	850
14.	Tropical Wood Working Industry	944	966	1160
15.	Fancy Veneer and Plywood Industry	1000	1000	1062
16.	Central Forest Products Industry	-	-	-
Total timber consumption		17043	18982	22776
Share of imported timber		4230	6611	7368

Comparison of data in Tables 4 and 5 indicates that some of the units, e.g. at serial No.11, are reportedly consuming a very large quantity of wood for plywood production. This may not be the situation. Either, the units in question are producing large quantities of allied products (flushdoors, veneers) or the figures reported are inflated.



### 3.9 **Transportation Distance of Raw Material**

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#### 3.12

The transportation distance of raw material for plywood industry varies from 20 to 1200 kilometers. The wood is generally procured in green condition and its moisture content upon arrival in factory varies from 30 - 70 percent. The desirable log size for plywood industry is 45-150 cm diameter with minimum length of 255 cm. For obvious reasons, there is no substitute of wood for the plywood industry.

### 3.13 **Domestic Plywood Consumption Including Imports**

Data on total domestic plywood consumption is available from 1975-76 onwards which are presented in Table 6. The figures include both local production and imports. Earlier, demand was high and reached maximum of 1,108,000 m<sup>2</sup> in 1980-81. The gap between local production and consumption was filled by imports. Later on, both demand and imports reduced every year and current total consumption is estimated at 889,000 m<sup>2</sup>. Per capita consumption of plywood in Pakistan is very low. It has remained at 0.1 m<sup>2</sup> level for a number of years.

### 3.14 **Factory Gate Wood Prices**

It was easy for the manufacturers to supply data regarding factory gate prices of woody raw material from their records and report the quantity of timber of purchased and price paid to the individual middlemen. The industry is using wood

species such as shisham, mango, semal, deodar, fir, poplar, teak, and some mixed hardwood species. The sources of woody raw material supply are not recorded separately and similar is the case with the price paid for the procurement of wood from state forests and farmlands and for imported wood. The current factory price of wood of different operating units is given in Table 7. There is considerable variation in prices of timber paid by them. The price depends upon species, size of logs, quality of logs in terms of their straightness and freedom from defects, such as knots, buttresses, etc. and transportation distance from supply sources to the factory gate. The prices of shisham, deodar, teak and keruing are of the same order. Similarly, mango, poplar, semul and fir cost almost same amount.

Table 6 Total domestic annual consumption of plywood in Pakistan from 1975-76 to 1988-89.

Year	Local production (000 m <sup>2</sup> )	Imports		Total (000 m <sup>2</sup> )
		Qty. (000 m <sup>2</sup> )	Value (Rs. million)	
1975-76	436	224	4.3	660
1976-77	716	75	2.6	791
1977-78	729	175	3.1	904
1978-79	710	239	4.2	949
1979-80	670	205	5.5	875
1980-81	700	408	10.3	1108
1981-82	750	300	14.0	1050
1982-83	760	372	11.3	1132
1983-84	740	67	1.7	807
1984-85	780	140	3.9	920
1985-86	775	28	0.8	828
1986-87	780	22	0.7	797
1987-88	780	63	1.7	843
1988-89	832	57	1.6	889

Source: The State of Forestry in Pakistan. Pakistan Forest Institute, Peshawar.

Table 7. Factory gate prices of wood of different species paid by plywood units, Rs. per m<sup>3</sup>

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### 3.15 Chemical Used

The commonly used raw material other than timber for manufacturing plywood are adhesive/glues as binders, non-woody wastes as fillers, extenders and hardeners. Out of these binders are major non-woody raw material consumed by the industry. The commonly used formaldehyde binders are urea, melamine, phenol, and resorcinol at the rate of about  $0.171 \text{ kg/m}^2$  of the plywood. Therefore, total current consumption of binders is estimated at 142 tons per annum. On the other hand, the fillers are starches, peanut, coconut and almond shell flour.

### 3.16 Waste Material Utilization

There are different stages of wood wastage generation during plywood and its allied products manufacturing processes in a unit. In the first stage, waste is generated in the form of bark. The second stage is the discarded material in the form of veneer and chips. There is some wastage when sorted veneer sheets are clipped and trimmed. Logs are peeled down to a core of 15 cms diameter, which is also discarded. In all about 50% of round wood volume is lost in the form of waste during plywood manufacture. According to the manufacturers, all wood waste produced in different forms is utilized to run the boilers in the factories. It was also observed that some of the graded wood waste is sold to the individual buyers as fuel for cooking purposes. The price at which different waste are sold is not known.

### 3.17 Expected Production and Wood Consumption

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All manufacturers willingly responded to the question pertaining to expected production and wood consumption in next three years. The expected average annual production of plywood, blockboard, laminboard, veneer, flush door and other products was estimated at 1037.2, 360.7, 45.0, 140.6, 322.0 and 59.3 thousand m<sup>2</sup> respectively. The yearly data are given in Table 8.

Table 8. Annual projected production of plywood and allied products from 1989-90 to 1991-92.

Year	Plywood	Blockboard	Lamin- board	Veneer	Flush doors	Total Common Plywood Equivalent
1989-90	954.9	333.5	43.7	76.8	290.1	5192
1990-91	1027.0	346.0	44.2	154.8	318.9	5530
1991-92	1129.8	402.7	47.1	190.1	357.0	6253

The reported future wood requirements of individual units is given in Table 9. The total wood requirements for the year 1989-90, 1990-91 and 1991-92 would be 26,506, 28,255 and 31,520 m<sup>3</sup> respectively. This also includes quantity of imported timber which would be used for manufacture plywood.

Table 9. The reported future wood requirements for the plywood industry 1989-90 to 1991-92.

S.No. Name of unit	Wood requirements m <sup>3</sup>		
	1989-90	1990-91	1991-92
1. K.D.C. Plywood Industry	2984	3014	3500
2. National Plywood Industry	453	453	453
3. Green Wood Working Industry	2038	2110	2250
4. Premier Plywood Industry	1132	1132	1330
5. Mughal Plywood Industry	857	1150	1286
6. Shalimar Plywood Industry	1715	1857	2000
7. Hattar Plywood Industry	875	1000	1150
8. Timber Center Plywood Industry	1150	1285	1428
9. Lyallpur Plywood Industry	857	1000	1143
10. Sadiq Plywood Industry	1920	2129	3150
11. Sunlight Plywood Industry	5000	5150	5380
12. Oosman Brothers Plywood Industry	2000	2200	2300
13. Aman Wood Working Industry	800	825	850
14. Tropical Wood Working Industry	1100	1100	1100
15. Fancy Veneer and Plywood Industry	1925	2000	2200
16. Central Forest Product Industry	1700	1850	2000
Total timber requirement	26506	28255	31520
Share of imported timber	7868	9215	10430

The wood consumption and production data show an increase in production of all plywood products with concomitant increase in wood consumption. However, it must be remembered that these forecasts are based on industry's perception of future demand of plywood and other products.

### **3.19 Current Products Price**

The owners were reluctant to supply information about break-up of the prices of their products. They supplied the whole sale price of plywood only. The average whole sale price of plywood was Rs.46.81 per m<sup>2</sup> in 1990. The prices of allied plywood products such as blackboard, laminboard and veneer was not provided by the plywood manufacturers.

### **3.20 Unit Cost of Production**

The data on unit cost of production was not supplied by the plywood manufacturers.

### **3.21 Employment**

The manufacturers had no hesitation in providing the information regarding number of workers employed in their respective units. The total number of workers employed in the industry was 1114. Out of this 564 were skilled and 433 were semi-skilled and casual labours. The rest were managerial and office staff.

### **3.22 Problems of Wood Supply**

All the surveyed units reported their potential for running on three shift basis but only one unit is actually running on three shift basis. The remaining four units are operating on two shift and eleven units are running on single shift basis. The plywood manufacturers revealed that acute shortage of wood and power load shedding are the major causes of low capacity utilization.

The plywood manufacturers purchase wood through contractors. They generally face acute shortage of quality woody logs to run their industry. In the case of imported wood, it was reported that the process is very lengthy and the wood is also costly.

### 3.23 Problems in Marketing of Products

At present, plywood manufacturers are not facing any problem in marketing of their products.

### 3.24 Reasons for Low Capacity Utilization

The present number of plywood manufacturing unit is 17. Out of these one unit M/S Bombay Plywood Industry was not willing to provide any data regarding their industry. The total installed capacity of the remaining 16 unit was 1,576,600 m<sup>2</sup> per shift of eight hours. Not a single unit is running at its full capacity. According to industry sources, the situation can be improved by an increase in production if sufficient quantity of wood is available.

### 3.25 Suggestions for the Improvement of Plywood Industry

Following suggestions were offered by the plywood manufacturers during the discussion.

- Increasing the rotation age of shisham in irrigated plantation of Punjab for production of large-size logs which are suitable for manufacture of plywood and allied products. Most of the manufacturers were of the view that locally grown shisham timber could eliminate the need for import of timber for their industry if sufficient quantities of the former are available in desirable size. Presently, most of the shisham grown in irrigated plantations of Punjab is converted into firewood as it is of small size and only small quantity is produced as veneer logs.
- Shisham is the most preferred timber species of the plywood industry. The industry would like to increase planting of this species in the irrigated plantation of Punjab.



- Direct sale of wood by the forest department to the plywood industry in the case of irrigated plantations of Punjab to eliminate contractor's profit and to bring down price of timber supplied to the latter.
- Extension of Forestry Planning and Development Project to irrigated areas in the country, so that farmers are encouraged to grow trees for industrial wood production.

## CHAPTER IV

### SUMMARY AND CONCLUSIONS

4.1 Only 17 plywood units are operating in the country, which manufacture blockboard, battenboard, laminboard, composite board and hollow core plywood or flush doors besides plywood. These are presently producing only about 831,600 m<sup>2</sup> of plywood against their installed capacity of 1,576,600 m<sup>2</sup> on single shift basis with capacity utilization of 52.8%. Products other than plywood are manufactured by them in variable quantities depending upon their local requirements. Hollow core plywood or flush doors are principal products in this regards, which is due to construction boom in the country. The import of plywood has declined over the years and the country is almost self sufficient in those wood products which are used for general purposes. Specific products e.g., marine quality plywood are still imported.

4.2 On the whole, production and consumption of plywood is very low in Pakistan, which is generally reflective of wood production and consumption situation in Pakistan. Per capita consumption of wood and its products is very low in Pakistan due to shortage of raw material and its high price as well as availability of substitute materials. Most of locally produced wood is used as fuel and only a small quantity is used as timber and its products. In spite of three fold increase in population over the years, the production and consumption of composite or reconstituted wood products has not increased substantially. It is well established fact that these products facilitate efficient and economic utilization of both low and high quality woods. This happens only when manufactured products are superior in quantity, suitable for various end-uses and low in price as compared to raw woody material. This is not the situation in Pakistan. Therefore, the production and consumption of these products has been low in the country.

4.3        There is considerable scope for increasing local production of plywood and allied production. No new units need to be set up for this purpose. Existing installed capacity need to be utilized fully for which sufficient raw material would be available from trees growing on the farmlands. Suitable woods of shisham, mango, semul, eucalypt and poplar are extensively being grown by the farmers on their farmlands throughout the country. When the industry starts utilizing larger quantities of raw material, then the farmers would be encouraged to grow more trees to increase their farm income. Coniferous forests and irrigated plantations should also continue to supply quality veneer logs to the industry.

## **CHAPTER V**

### **RECOMMENDATIONS**

The results of this study suggest a number of recommendations. If implemented, these would result in increased production and utilization of the plywood as well as in improvement of raw material supply. The recommendations are listed below:

#### **5.1 Full Capacity Utilization**

The present capacity utilization is only 52.8% of installed capacity on single shift basis. This shows that there is scope for increasing present production by almost six times if all units work on three shifts basis.

#### **5.2 Improvement in quality**

Presently, the quality of locally manufactured plywood is not upto national and international standards. This need to be improved. Further, speciality products be manufactured for specific end uses.

#### **5.3 Sale Promotion**

The local production and consumption of plywood and allied products is very low. If production is to be increased, then industry should start a sale promotion measures to encourage their utilization in place of solid wood.

#### **5.4 Reduction in Prices**

Current market price of plywood is prohibitively high and does not facilitate its extensive utilization instead of solid wood. The price will have to be reduced if extensive use of plywood in the country is to be achieved.

### 5.5 Wood Supplies

There is perceived shortage of quality logs supply on the part of industry. The farmers could be encouraged to grow large size timber if suitable prices are paid to them. Forest Department of the Punjab should also set aside specific area of irrigated plantations for this purpose.

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**Appendix - I****LIST OF PLYWOOD INDUSTRY IN PAKISTAN**

1. M/S K.D.C. Plywood Factory,  
Off. G.T. Road,  
P.O.Box No.13,  
Jhelum.
2. M/S Bombay Plywood Industry,  
18, Peshawar Road,  
Rawalpindi.
3. M/S National Wood Industry (Pvt) Ltd.  
G.T. Road,  
Lala Musa.
4. M/S Sadiq Plywood Industry,  
G.T..Road,  
Kala Shah Kaku,  
Distt. Sheikhpura.
5. M/S Green Wood Working Industry (Pvt) Ltd,  
Peco Rod,  
Opp. Railway Station Kot Lakhpat,  
Lahore.
6. M/S Premier Plywood Industry,  
Peco Road Kot Lakh-Pat,  
Lahore.
7. M/S Shalimar Plywood Industry,  
New Lahore Road,  
Faisalabad.
8. M/S Lyalpur Plywood Industry,  
Sargodha Road,  
Faisalabad.
9. M/S Timber Centre,  
Plywood Factory,  
Rata Amral,  
Rawalpindi.
10. M/S Mughal Plywood Factory,  
G.T. Road,  
Rawat,  
Rawalpindi.

11. M/S Hittar Plywood Factory,  
Industrial Estate,  
Hittar,  
Distt. Abbottabad.
12. M/S Sunlight Wood Products (Pvt) Ltd.,  
Plot No.15,  
Sector 20,  
Korangi,  
Industrial Area,  
Karachi.
13. M/S Oosman Brothers,  
Plywood Industry,  
Plot No.15,  
Sector No.24,  
Korangi Industrial Area,  
Karachi.
14. M/S Aman Wood Working Industry,  
Plot No.61,  
Sector No.28,  
Korangi,  
Industrial Area,  
Karachi.
15. M/S Tropical Wood Working Industry  
Plot No.1,  
Sector No.29,  
Korangi,  
Industrial Area,  
Karachi.
16. M/S Central Forest Products Ltd.,  
Central Chamber Ireland Road,  
Old Haji Camp,  
Karachi.
17. M/S Fancy Veneer and Plywood Industry,  
Plot No.68, 69,  
Sector No.28,  
Korangi,  
Industrial Area,  
Karachi.



**Appendix - II****WOOD CONSUMPTION SURVEY QUESTIONNAIRE  
PLYWOOD INDUSTRY**

Serial No. \_\_\_\_\_

Date \_\_\_\_\_

1. Name and address of the firm

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

2. Year The Firm Was Established \_\_\_\_\_

3. Current Annual Installed Capacity per Shift by Product:

	No. of Possible Shifts	Potential Production Per Shift
Commercial plywood	_____	_____
Marine	_____	_____
Blockboard	_____	_____
Veneer	_____	_____
Flush doors	_____	_____
Others	_____	_____

4. Potential Number of Shifts/Day \_\_\_\_\_

5. Annual Production by kinds of Product:

Kind of Product	No. Produced per year		
	1986/87	1987/88	1988/89
Commercial plywood	_____	_____	_____
Marine	_____	_____	_____
Blockboard	_____	_____	_____
Veneer	_____	_____	_____
Flush doors	_____	_____	_____
Others	_____	_____	_____

6. Actual wood requirement during last three years:

Year	Species used		Wood consumption cft/m <sup>3</sup>	Type of Product
	Farm lands	State lands		
1986-87				
1987-88				
1988-89				

## 7. Existing market prices of wood, specieswise at the factory gate

S.No.	Species	Local Rs./cft/m <sup>3</sup>		Imported Rs./cft/m <sup>3</sup>
		Farm lands	State lands	

- 1.
- 2.
- 3.

## 8. Materials used other than wood: Quantity \_\_\_\_\_ tonnes

## 9. Expected Annual Production by types of products expected qty. of wood required:

Type of Product	1989/90	1990/91	1991/92
Commercial	_____	_____	_____
Marine	_____	_____	_____
Blockboard	_____	_____	_____
Veneer	_____	_____	_____
Flush doors	_____	_____	_____
Others	_____	_____	_____

## 10. Current selling price of the product:

Price Rs./unit

Commercial	_____
Marine	_____
Blockboard	_____
Veneer	_____
Flush doors	_____
Others	_____

## 11. Unit Cost of Production

Wood \_\_\_\_\_ %  
 Labor \_\_\_\_\_ %

## 12. Number of Employees

Professional/Managerial	_____
Office Staff	_____
Skilled	_____
Semi/Unskilled	_____
Casual	_____

**Appendix - III****REVISED WOOD CONSUMPTION SURVEY QUESTIONNAIRE  
PLYWOOD INDUSTRY**

Serial No. \_\_\_\_\_

Date \_\_\_\_\_

1. Name and address of the firm \_\_\_\_\_
2. Year of establishment \_\_\_\_\_
3. Annual installed capacity per shift
 

By products	Production capacity (m <sup>2</sup> )
Commercial plywood	_____
Marine	_____
Blockboard	_____
Laminboard	_____
Batten-board	_____
Core-plywood	_____
Veneer	_____
Flushdoors	_____
Others (specify)	_____
4. No. of shifts in operation per day \_\_\_\_\_
5. No. of operating days \_\_\_\_\_
6. No. of effective operating days \_\_\_\_\_
7. Annual actual production (1986-87 to 1988-89)
 

By products	Actual production (m <sup>2</sup> )		
	1986-87	1987-88	1988-89
Commercial plywood	_____	_____	_____
Marine	_____	_____	_____
Blockboard	_____	_____	_____
Laminboard	_____	_____	_____
Batten-board	_____	_____	_____
Core plywood	_____	_____	_____
Veneer	_____	_____	_____
Flush-doors	_____	_____	_____
Others	_____	_____	_____

8. Actual wood consumption during last three years
 

Sources of wood supply	Wood species	Quantity Cft/m <sup>3</sup>
1. Farmlands		
1986-87		
1987-88		
1988-89		
2. State forests		
1986-87		
1987-88		
1988-89		
3. Imports		
1986-87		
1987-88		
1988-89		
9. Wood consumption by plywood industry
10. Moisture content in different wood species:
 

Woody species	Moisture %
a.	
b.	
c.	
d.	
e.	
f.	
11. Desirable size of wood
 

Species	Size
a.	
b.	
c.	
d.	
e.	
f.	
12. Possibilities for substitution of wood
 

Woody species wise	Non-woody
13. Domestic plywood consumption including imports

14. Existing market prices of wood species-wise at factory gate

Source of supply	Wood species	Local/import price Rs.Cft/m <sup>3</sup>
------------------	--------------	---

1. Farmlands a.

b.

c.

d.

e.

2. State forests a.

b.

c.

d.

e.

3. Imports a.

b.

c.

d.

e.

15. Chemical used other than wood Quantity/value

16. Waste material utilization

17. Annual projected production by types of products

Type of products	Annual projected production m <sup>2</sup>		
	1989-90	1990-91	1991-92
Commercial plywood	_____	_____	_____
Marine	_____	_____	_____
Blockboard	_____	_____	_____
Laminboard	_____	_____	_____
Batten-board	_____	_____	_____
Core plywood	_____	_____	_____
Veneer	_____	_____	_____
Flush-doors	_____	_____	_____
Other	_____	_____	_____

## 18. Expected quantity of wood required by products

Products	Wood requirement (m <sup>3</sup> )		
	1989-90	1990-91	1991-92
Commercial plywood	_____	_____	_____
Marine	_____	_____	_____
Blockboard	_____	_____	_____
Laminboard	_____	_____	_____
Battenboard	_____	_____	_____
Core plywood	_____	_____	_____
Veneer	_____	_____	_____
Flush-doors	_____	_____	_____
Other	_____	_____	_____
Total	_____	_____	_____

## 19. Current selling price of the product:

Products	Price/Rs./Unit m <sup>2</sup>
Commercial plywood	_____
Marine	_____
Blockboard	_____
Laminboard	_____
Batten-board	_____
Core plywood	_____
Veneer	_____
Flush-doors	_____
Other	_____

## 20. Unit cost of production

- i) Wood \_\_\_\_\_ %  
 ii) Chemical \_\_\_\_\_ %  
 iii) Labour etc. \_\_\_\_\_ %  
 iv) Packing \_\_\_\_\_ %

## 21. Number of employees

Professional/Managerial	_____
Office staff	_____
Skilled	_____
Semi-skilled	_____
Casual	_____
Total	_____

22. Problems in obtaining wood from different sources:
23. Problem in marketing of the products:  
Problems:
24. Reason for low capacity utilization
25. Any suggestion for the improvement of plywood industry.

Fig.1. Location and number of plywood units in Pakistan

