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DEVELOPMENT OF THE FURNITURE AND JOINERY

INDUSTRIES AND CREATION OF A CENTRE*

DP/YUG/73/006

YUGOSLAVIA

Technical report: Medium term plan for the marketing of wood based panels in the ŠIPAD Organization

Prepared for the Government of Yugoslavia
by the United Nations Industrial Development Organization,
executing agency for the United Nations Development Programme

Based on the work of Erik K.I. Syll, expert in forest industry strategies and marketing

United Nations Industrial Development Organization

Vienna

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EXPLANATORY NOTES

The following abbreviotions are used in this report:

BiH	-	Republic of Bosnia and Herzegovina
wbp	-	wood based panels
prefab	-	prefabricoted
MDF	-	medium density fibreboard

A full stop (.) is used to indicate decimals.

Use of o hyphen (-) between years, e.g. 1975-1977, signifies the full period involved, including beginning and end years.

The monetary unit in Yugoslavia is the dinor (Din). During the period covered by this report, the value of the dinar in relation to the United Stotes dollar wos US $ 1 = Din 18.10.

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ABSTRACT

The consultant, an expert in the marketing of wood based panels, spent 3 1/2 weeks in Sarajevo from 7 January 1978.

His mission was to advise the top management of ŠIPAD on long term market trends and policies for the development of production capacity for wood based panels within ŠIPAD both for the medium and long range.

The expert's principal recommendations to the top management of ŠIPAD were:

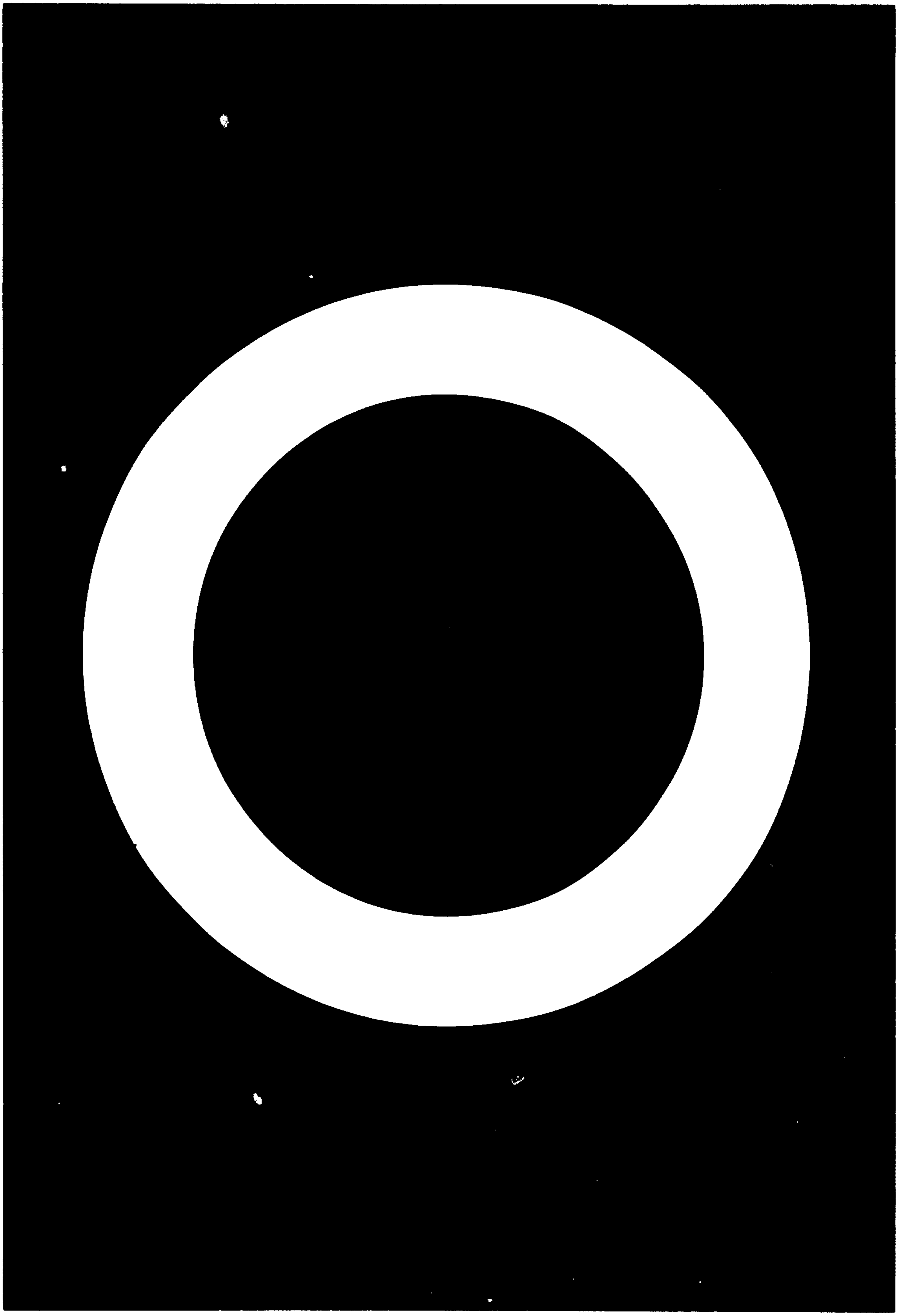
- to introduce particleboard as a material for joinery purposes and, to some extent, also for construction and house building;

- to add new properties to ŠIPAD's particleboard which will be required when the board is used in joinery and house building. Among such properties primarily ready-to-paint surfaces, laminates decorative or else fully finished and fire resistancy ought to be chosen;

- to use insulation board as a middle layer in an energy saving "Thermo board" for interior walls, the surface being hardboard or thin particleboard;

- to increase the insulation board production capacity by a new line for 25 000 m3 (in operation 1981)

- to increase the particleboard production capacity by a new factory for 100 000 m3 3-layer boards of standard thicknesses (in operation summer 1981)



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INTRODUCTION

The expert's mission was part of a larger project "Development of the Furniture and Joinery Industries and Creation of a Centre" (DP/YUG/73/006). This project was submitted by the Government of Yugoslovio in December 1973 and approved by the United Nations Development Programme (UNDP) and the executing agency, the United Nations Industrial Development Organisation (UNIDO), in August 1974.

The long ronge objectives os set forth in the project document were to enoble the furniture and joinery industries, which includes the wooden house industry, initially in the Republic of Bosnia and Herzegovina (BiH) and eventually in oll of Yugoslavio to make a greater contribution to the economy of the country and to increose their participation in domestic and foreign markets. Immediote objectives were to help the industries to increase the value of production, to design new products and to forecast market requirements and adopt production occordingly.

The furniture and joinery industries of Bosnia and Herzegovina contribute obout 8 % of the goods and services produced in the Republic ond represent 4 % of its exports. The principal aim of BiH in o five-yeor development plon for this sector now being implemented is to double the production of furniture to attain o value of Din 2,000 million and to increose the work force from 6,000 to 9,000 persons. This plan calls for an investment of Din 800 million. Joinery production will increase from o value of Din 200 to Din 650 million and the work force will triple to reach 4,500 persons. Investment of Din 950 million is foreseen for joinery plants.

ŠIPAD, the counterpart agency, is on integrated co-operative forest industry organization consisting of 126 factories in BiH, employing 55,000 persons and covering the complete range of wood processing industries from forestry, saw mills, pulp ond paper production, WOOD BASED PANELS (plywood/block boord, porticle board, and fibreboord) joinery, prefab houses and furniture. At present ŠIPAD accounts for 80 per cent of the totol forest, 65 per cent of saw-milling ond 85 per cent of the final products of the wood industries of the Republic. Approximately one third of Yugoslavia's totol forest resource are located with BiH. Two thirds of the totol are broad-leaved species, mainly beech, and one third are conifers.

As part of the project, Erik K.I. Syll, on expert in forest industry strategies and marketing, was sent on a one month mission to advise the top monogement of ŠIPAD on long-term market trends and policies for the development of production capacity for wood bosed panels within ŠIPAD, to make recommendations on ŠIPAD's marketing strategy for wood bosed panels for the immediate future ond the long range, and to suggest a plon for the development of ŠIPAD's production copacity for wood bosed panels. (The expert's job description is given in annex I)

The mission was carried out from 2 January to 1 February, 1978 with a visit to the ECE/FAO Timber Committee in Geneva included. For his work in Sarajevo a team of ŠIPAD staff has supplied general information and data to the expert.

FINDINGS

I. Assessment of the present production capacities of ŠIPAD plants for wood based panels

The exact production capacities of ŠIPAD plants for wood based panels have been assessed as follows, capacity figures being based on the assumption of operations running at 3 shifts with 4 teams and a yearly close down of 3 weeks for repairs and maintenance.

Particle board (in cubic meters)		Dimension manufactured in cm
Romanija, Sokolac	60 000	540 x 215
Sana, S. Most	50 000	488 x 205
Una, Bos. Krupa	40 000	866 x 205
Šator, Glamoč	50 000	526 x 205
Maglić, Foča	30 000	∞ x 210
Total	230 000	

The Maglić factory in Foča manufactures thin particle board, one layer 3.5 mm. All the other factories manufacture 3-layer particle board in thicknesses between 8 and 30 mm. A break down of actual (1977) production figures for 3-layer particle board according to thicknesses is shown under III.

The production units were all taken into operation during the mid 1970-ies, Maglić Foča as late as in 1977. Thus their technical status is adequate to modern technology in this field at the same time as costs of maintenance are low. From experience of normal continuous rationalization in new mills production capacity can be expected to increase at some 1-5 %. This, however, has not been taken into account in the figures shown above.

At present the ŠIPAD particle board factories offer no semi-finished or fully finished products of any kind. The only surface treatment carried out is sanding.

Fibre board (in tons)			Dimension manufactured in cm
Bosanka, Blažuj	16 000	hard board	549 x 122
Maglić, Foča	25 000	hard board	549 x 122
	4 000	insulation board	549 x 122
Total	45 000		

Thicknesses are 3.2 - 4.0 and 5 mm (hard board) and 12.7 mm (insulation board).

Both of the fibre board factories are using the "wet way" process. They are about 25 years old and their machinery and equipment are in accordance with their age. Maintenance is said to have been below average for some years. Yugoslav authorities are raising very strict demands for reduction of water pollution, which will mainly concern the Bosanka Blažuj mill. In this report it has been assumed that the mills will be able to meet with these anti-pollution requirements.

ŠIPAD fibre board - both hardboard and insulation board - is mainly manufactured in sheets without further surface treatment. The Bosanka Blažuj at present cannot manufacture but plain fibre board. In Maglić Foča, however, equipment for decorative laminating of their hardboard is available, some 4 % of their actual hardboard production being laminated (Leso dekor).

Plywood (in cubic meters)

Bosanka, Blažuj		25 000
Jadar, Zvornik		16 000
Sanica, Ključ		5 000
Mostar, Mostar		5 000
	Total	51 000

The plywood mills of ŠIPAD are between 15 and 25 years old. There is an investment plan made for them which as to the Blažuj and Zvornik mills has been effected already by the investment of new peeling machines to ensure continuing operations and to increase the capacity of these mills. Similar steps will be taken in Sanica Ključ and in Mostar. In 1980 the capacity of these two mills will be increased by a total of 5 000 m3 with the effect that the total plywood production capacity of ŠIPAD will reach close to 55 000 m3 in 1980.

The Bosanka Blažuj mill at present is the only plywood mill in ŠIPAD which disposes of equipment for surface treatment of its board (laminates of phenolic paper film). The other mills manufacture plain plywood only.

Blockboard (in cubic meters)

Bosna, Ilijaš		3 600
Jadar, Zvornik		1 680
Grmeč, Drvar		12 000
Janj, Donji Vakuf		3 420
Sanica, Ključ		10 000
Maglić, Foča		6 500
Sana, S. Most		3 000
	Total	40 200

Standard thickness of ŠIPAD blockboard is 18 mm.

Though ŠIPAD manufactures blockboard in 7 different mills the total production capacity is fairly low, the main reason for this being the labour intensive and highly manual methods to which blockboard production is subdued. The mills operate in combinates and are in the age bracket of 5 - 12 years, yet one of them (Bosna, Ilijaš) being built as early as 1958. At present a new machine is installed in Maglić Foča, which will increase the capacity of this mill by 1000 - 2000 m3.

The Jador Zvornik mill is the only one to manufacture surfaced blockboard (veneers of oak and tropical wood species on both sides).

II. Demand for wood based panels in Yugoslavia 1978 - 2000

Information on the demand for wood based panels in Yugoslavia can be obtained from different sources. The information compiled and used here is forecasts prepared by the Economic Chamber of Yugoslavia and the Institute for Social Planning in Belgrade, estimates made in October 1977 by the ECE Timber Committee and information available through the FESYP (Féderation Européenne des Syndicats de Fabricants de Panneaux de Particules), ŠIPAD as well as private, non official sources.

Table 1 Projections in 000 m3 on the demand for wbp in Yugoslavia 1978 - 2000

	Present	1980	1990	2000
Particleboard	610	770	1800	2730
MDF		25	120	215
Fibre board	100	118	125	150
Plywood	84	87	90	100
Blockboard	56	58	75	80
Total wood panels	840	1055	2215	3275

The figures of Table 1 may seem amazing to executives who are dealing with the day-to-day routines, facing problems of finding markets for the products now manufactured. Yet, they are based on patterns of consumption development well known. They could be changed mainly if extraordinary events, which stop normal economic development, occur or if unexpected inventions lead to quite new technological solutions.

With this reservation in mind the question can be raised whether it makes sense to present forecasts for 1990 and 2000, furthermore specified on different types of wbp. Here such forecasts have been given, however, to reflect the trends which can be identified during the 1970-ies, especially after 1973, in Yugoslavia and in other industrialised countries.

These trends ore os follows:

1. Yugoslavia is developing ropidly into o consumer's market ond as a consequence, the demand for products to be used in privote households incl. homes, of consideroble importonce olready, will continue to rise. In such o market the standord of living measured by commodities ond luxuries in homes - size of flat, kitchen equipment, furniture, perhops weekend house - ploy on importont role. Though it is well known, that home commodities do not ronk highest among the consumer's preferences when he con sotisfy more thon basic needs, the importance of them connot be underestimated. Thus, the demand for lorger flats ond for one-family houses will increose os will the demand for furniture, kitchen fitments ond joinery of o wide scole. The Yugoslov increase in demand for furniture hos been estimated ot more thon 8 % per year till at leost 1980.

2. Wood based panels consumption is strongly offected by demand for residence ond other buildings ond for joineries ond furniture. When the demand for these increases, consumption of wbp olso increoses.

3. Houses made of wood have no tradition in Yugoslavia except in the Alpine northwestern part of the country. Thus wood as o material for house construction is looked upon to-doy with suspiciousness, one could even soy thot it is regarded os a materiol inferior to bricks ond concrete for house building. It connot be foreseen thot this ottitude towards wood will chonge very rodically during the next two decodes. However, it is possible to influence, to some degree, the pattern of consumption so that the use of wood materiols will be extended to new oreos of utilizotion in the house building sector.

4. Plywood and blockboard, like sown timber, are relotively expensive products, whereos particleboard ond fibreboard are foirly cheop. These price relotions ore not likely to chonge in the future but they might very well become more emphosized os the supply of roundwood becomes unsufficient to meet with requirements. This will estoblish o restriction in the use of sown timber, plywood ond blockboard. Where these products con be substituted by others, which ore cheaper, the latter will be preferred. This is the moin reoson why particleboard must be considered o materiol of for better increose prospects than plywood ond blockboord. Lobour costs olso give particleboord on odvontoge. In the future industry MDF will substitute pure wood when the market has become more oware of its properties ond possibilities. Fibreboard will hove o positive consumption development in the next 5 to 8 years, but ofter the mid 1980-ies its increase will be modest. It will not be oble to keep its present position on different markets. Here exception must be made for insulotion boord, which will probobly prove to be very competitive to other insulotion materials manufactured ot o high consumption of energy like for instance rock-wool.

5. As the furniture and joinery industries will be built out within ŠIPAD during the 5 year plan now running, the demand for wbp from ŠIPAD's own factories will grow. The rate of growth is higher than the average rate for Yugoslavia as a whole and has been forecasted at 16 % per year in the period 1976 - 1980, yet production of doors and other joinery accounting for a still higher increase rate.

6. Prefab houses will find a growing market in Yugoslavia. Due to the traditional preference for houses made of concrete or bricks, however, prefab houses of wood will have their best opportunities in the weekend house sector. This sector too is growing in Yugoslavia. Yet, a sharp increase in demand for prefab houses made of wood is not likely to occur without a change in the exterior appearance of the houses. To achieve an attractive appearance, it will be necessary to offer walls of solid wood (sawn timber). Wood panels will find their use in interior walls, floors, ceilings and joinery. Again particleboard - 18 mm - should be chosen. Insulation board in walls should be offered for permanent residence houses and for weekend houses, where insulation properties are required.

III. ŠIPAD's present and past markets for wood based panels

Particleboard

Within ŠIPAD particleboard production is of a recent date (see "Assessment of the present production capacities of ŠIPAD plants for wood based panels"). For many years Yugoslavia as a whole has been an importer of particleboard. As a consequence ŠIPAD up till now has been able to sell its particleboard on the domestic market.

Thicknesses and end uses are as follows:

8 mm	1 800 m3	prefab houses
10 mm	12 600 m3	" "
13 mm	5 400 m3	joinery
16 mm	36 000 m3	furniture
18 mm	90 000 m3	"
19 mm	15 850 m3	"
21-30 mm	1 800 m3	"

In 1977, 78 750 m3 of ŠIPAD's particleboard production has been "sold internally", that is for further use as semi-products in the furniture and prefab industries. Prefab house production, however, accounts for only 3 750 m3 of this quantity, furniture industries for 75 000. Internal utilization of ŠIPAD particleboard at present accounts for 35 % of the total particleboard production.

Some 145 000 m3 of the ŠIPAD particleboard production in 1977 were sold to customers in the rest of Yugoslavia, mainly to furniture industries. 33 000 m3 were sold to joineries or for joinery purposes.

ŠIPAD has not exported any quantities of its own particleboard production in the past and is not exporting any quantity of its present production.

For thin particleboard (Foča factory) the local manager claims a lack of market. High customs walls and own production in countries where thin particleboard is used have, up till now, prevented a break through on export markets.

Fibreboard

Total capacity of fibreboard production in Yugoslavia is only some 110 000 m3 and ŠIPAD represents more than 40 % of it. Thus the ŠIPAD fibreboard factories have had fairly good sales during the last two years, operating at close to their maximum capacities. Standard thickness is 3.2 mm. Thicker board is manufactured at special request only. The demand for fibreboard thicker than 3.2 mm is small.

ŠIPAD factories for final wood products, mainly furniture factories and, to a very small extent, joinery and prefab house factories, in 1977 used only 2 550 m3 of ŠIPAD's hardboard (Lesonit). 32 450 m3 were sold to other customers in Yugoslavia, mainly furniture industries.

Exports of hardboard were some 9 000 m3 in 1977 and similar figures have been reported for 1976. Compared to 1975 exports have increased considerably. The most important markets in 1976 were the Syrian Arab Republic, Canada and Somalia, in 1977 Algeria, Morocco, Canada and Somalia. The Syrian Arab Republic's import of ŠIPAD fibreboard decreased in 1977.

Fibreboard with decorative laminates from the Foča mill has had small sales. Factories in Slovenia here are highly competitive, due to longer experience and, as one of ŠIPAD's representatives put it, more adequate production equipment.

Insulation board is sold within Yugoslavia only, where it is used for insulation purposes in buildings. Quantities are small. Buyers are contractors and retail sale stores.

The Foča fibreboard, a 12.7 mm sandwich board with a core of insulation board between two layers of 3.2 mm hardboard, has not found any market up till now.

Plywood

The Yugoslav market for plywood has shown indisputable signs of stagnation since 1970. Consumption has been well under 85 000 m3 for the whole country in every year since 1970 and this is substantially below the Yugoslav production though the capacity has not been built out to any significant degree during the same period.

Out of ŠIPAD's production of some 53 000 m3 in 1977 8 000 m3 have found their use internally. Furniture factories and joineries have each bought half of it.

38 000 m3 of ŠIPAD plywood have been sold "externally" within Yugoslavia in 1977, of which 25 000 m3 for shuttering. The rest has gone to furniture and joinery production and to the manufacturing of containers. In joineries ŠIPAD plywood is used mostly for flush doors, thin veneered.

Exports of ŠIPAD plywood have been small in previous years though they have increased. In 1977 ŠIPAD exported 7 500 m3 of plywood. A few markets, Algeria, Syrian Arab Republic, Egypt and Iraq, have appeared to be more than occasional buyers. Yet, they all account for rather small quantities each.

A break-down into dimensions, quantities and end uses is given in Annex IV.

Blackboard

Blackboard in Yugoslavia shows a consumption similar to that of plywood. Consumption within Yugoslavia has not grown since 1970. In 1977 it was some 55 000 m3.

Private carpenters and contractors in Yugoslavia form an important market for ŠIPAD blockboard. Their area of usage is for partition walls, kitchen fitments and shop furnishing.

ŠIPAD's internal use of blockboard is scarce and counted some 1 300 m3 only in 1977, most of which was bought for final use in its furniture industry and prefab house factory.

Exports of ŠIPAD blockboard had a peak in 1976 when they reached close to 12 000 m3. In 1977 exports fell to slightly over 7 300 m3, probably a reflection of the general setback of the international trade of forestry products in 1977 compared to 1976. Arab countries, mainly Algeria, Syrian Arab Republic, Iraq and Jordan, have been the importers, all of them accounting for only small quantities, however.

As the real end use in the Yugoslav private carpenters' and contractors' market sector and in the export markets is both uncertain and varying from time to time, a break down of ŠIPAD's total blockboard production - see Annex IV into dimensions, quantities and end use must be approximative.

In general

No explicit trends in sales volume by product and market can be traced by studying the internal records of ŠIPAD as concerns plywood, blockboard and fibreboard. When it comes to particleboard, the trends show that particleboard is the product which grows fastest.

The positive trend of ŠIPAD particleboard in the past will be further stressed in the years to come as the higher internal demand from the furniture factories effects the sales. In 1980 more than 120 000 m3 of particleboard will be used within ŠIPAD as seen in Annex II.

IV. Demand for wood based panels in Europe and in key countries in the rest of the world

Information on demand for wood based panels in Europe can be obtained from ECE/FAO Timber Committee "European Timber Trends and Prospects 1950 to 2000, Supplement 3 to volume XXIX of the "Timber Bulletine for Europe", Geneva, January 1977. This source has been used here together with complementary data obtained from officials of the same Timber Committee. For the non-numeric description of expected development in the wbp sectors non official Scandinavian sources have been used.

Working with "high" and "low" alternative projections depending on e.g. the development of gross domestic product ECE/FAO forecasts total European demand for wbp at 45.9 - 47.4 million m3 in 1980 and at 79.3 - 84.1 million m3 as an average of the years 1969 - 1971. In quantities the increase of consumption will be considerable as seen in table 2, and it still goes up in traditional plywood using countries as France, United Kingdom and Federal Republic of Germany.

The consumption per capita of wood-based panels in some European countries is shown in Annex V.

TABLE 2

Europe: Projections of consumption of wood based panels and paper and paperboard 1990, by assortments and country groups (Extract), million m^3

	TOTAL EUROPE	Nordic countries	European Economic Community	Central Europe	Southern Europe a)	Eastern Europe
PLYWOOD & VENEER SHEETS						
1969-71 (average)	6.26	0.33	3.84	0.13	0.83	1.13
1990 (projected)	11.39-14.81	0.65-0.85	5.61-7.46	0.18-0.25	1.56-2.28	3.38-3.97
PARTICLEBOARD						
1969-71 (average)	12.63	0.79	8.27	0.27	0.96	1.89
1990 (projected) b)	62.53-61.27	4.39-4.00	38.09-37.32	2.77-2.78	6.02-6.38	11.26-10.78
FIBREBOARD						
1969-71 (average)	4.19	0.72	2.03	0.13	0.19	1.12
1990 (projected)	5.41-8.07	0.64-1.04	1.68-2.72	0.08-0.15	0.42-0.72	2.58-3.44

a) including Cyprus, Israel and Malta.

b) The projection of slower growth of particleboard consumption being associated with the higher income growth assumption may be explained by some anomalies in the relationship between per caput consumption and per caput GDP in some countries' historical data on which the projections are based.

Consumption development of particleboard in Europe except the USSR should be measured against the fact that it has already reached the level of 22 million m3 when this report is written. Corresponding figure for plywood is 5.5 million m3.

Fibreboard consumption will increase considerably in southern and eastern Europe, but in the rest of Europe consumption prospects are uncertain for this product.

Consumption figures must be judged with the information production and trade in mind. In many countries in Europe particleboard and plywood industry has been built out during the 1970-ies to such extent that not only can it supply its countries but also export large quantities to other parts of Europe which are not self-sufficient. Tables 3 and 4 below illustrate this well. It ought to be observed that the tables cover only years up till 1977.

Table 3

Europe: Changes in production of particleboard, 1969 - 71 to 1974 - 76, in selected countries

	Volume		Change 1969-71 to 1974-76		Self-sufficient indicators	
	1969-71 (av)	1974-76 (av)	Volume	%	1969-71 (av)	1974-76 (av)
	(1 000 m3)			%	P/AC ratio (index-Ac = 100)	
PRODUCTION in EUROPE, of which	12501	20351	+7850	+ 63	100	100
Germany, Fed. Rep.of	3829	5726	+1897	+ 50	98	102
France	1272	2053	+ 781	+ 61	92	98
Belgium-Luxembourg	1237	1733	+ 496	+ 40	200	255
Italy	953	1433	+ 480	+ 50	110	87
Sweden	400	953	+ 553	+138	115	153
Spain	382	813	+ 431	+113	97	99
Finland	398	752	+ 354	+ 89	175	160
Romania	326	730	+ 404	+124	129	160
Poland	333	664	+ 331	+ 99	87	70
Austria	484	887	+ 403	+ 83	136	171

Table 4

ECE region: Chonges of production ond trade of plywood, 1969 - 71 to 1974 - 76, in selected countries

	Volume		Change 1969-71 to 1974-76		Self-sufficient indicators	
	1969-71 (av)	1974-76 (ov)	Volume	Per cent	1969-71 (ov)	1974-76 (ov)
	(1 000 m3)			(%)	P/AC rotio (Index-AC = 100)	
PRODUCTION						
USA	14632	15492	+860	+ 6	89	93
Canodo	1973	2193	+220	+11	110	89
Europe, of which:	4067	3831	-236	- 6	84	75
France	649	634	- 15	- 2	95	94
Finland	687	491	-196	-29	731	446
Germany, Fed.Rep of	573	439	-134	-23	78	63
Italy	423	367	- 56	-13	126	118
Spain	237	290	+ 53	+22	113	111
Czechoslavakio	164	220	+ 56	+34	101	103
Romania	293	290	- 3	- 1	154	158

A continous construction of new particleboord-, plywood- ond fibreboard foctories is not likely to be limited within the next ten years by shortage of raw moteriol supply, as significant reserves of hardwaod forests and trees of thin dimensions ore ovoiloble in continental Europe. Only in areas where the pulp industry hos been built out so thot it competes with the board industry for thinner roundwood ond saw mill wastes, that is mainly in Scandinovio, raw materiol supply will be o limiting foctor. The scope for new plywood foctories will be dependont mainly on their ability to compete with the saw mill industry for the thick dimensions of roundwood. This leaves demand and price os the main restroining factors for the estoblishment of new wbp industries in Europe.

Though Europe is for below self-sufficiency in plywaad production, it hos suffered from severe competition with Eost Asio and the US during 1976 ond 1977 due to lower costs for raw materiols ond/or wages in these regions.

East Asia has offered good qualities of hardwood plywood and the US of softwood. As the production capacity in countries as the Republic of Korea, Singapore, Malaysia and Philippines is built up to meet demand in Europe and North America, the pressure on prices will continue and chances for a substantial capacity increase in Europe during the next 5 years are small with exception of Romania and Czechoslovakia possibly. Offers of North American plywood to the European market can be expected but like in the past they will vary strongly depending on domestic demand in Canada and the US.

For fibreboard demand stagnated in Western Europe in the beginning of the 1970-ies at the same time as the industry was built out. West European fibreboard industry is not likely to compete very strongly on new markets in eastern and southern Europe as it suffers from low profitability. It should be observed that at present eastern Europe in total has a slight overproduction of hardboard.

New European capacities of particleboard were introduced very rapidly in 1970 - 1975. As the production could not be adapted immediately to demand, the industry had to face an overcapacity estimated at 4 - 5 million m3 in 1977 with a subsequent low profitability. As a consequence practically all plans of new capacities in western Europe have been abolished or postponed to a yet not defined period.

According to the forecasted growth of demand a new balance between production and capacity could be achieved in 1980-81. After that, new capacities will be attractive again. In eastern Europe raw materials are available which fit well to the manufacture of particleboard and fibreboard. Hence for instance according to the 5 years plan in Czechoslovakia particleboard production will increase by some 200 000 m3 and fibreboard production by 80 000 m3. In the USSR the construction of new wood based panel factories for all sorts of boards will continue according to published plans. This new production is expected to be used within the USSR. In a longer view, however, the expansion of the pulp industry is likely to be a limiting factor. Here the 7 years development plan for the pulp and paper industry of the Comecon countries could be quoted.

As said before, the need for imports of wbp in Europe is expected to increase most in southern Europe (by 0.5 - 1.0 million m3/year until 1980). It is also expected to increase in eastern Europe (by at least 1.0 million m3 until 1980). Prospects, however, ought to be widened to the Mediterranean area as a whole, where the countries in northern Africa and the Middle East are of special interest. Import need of wbp to these countries in the years until 1980 is expected to grow at some 0.5 million m3/year, per caput consumption to-day being low, lower than in any country in Europe except for Albania. They are natural markets for Yugoslav exports and, except for Turkey, they are not likely to build up on own wbp industry as they have no substantial raw materials to rely on. Among them Algeria, Egypt, Tunisia, Turkey and Morocco will have considerable growth potential after 1980, like the Libyan Arab Jamahiriya.

In the Middle East economic growth because of income from oil exports has led already to a very rapid expansion of house building. Yet this expansion is only in its initial stage and it will continue during the next 10 - 15 years. It ought to be observed that these markets (where Iraq, Iran and Saudi Arabia are regarded as the most "promising") are aimed at by practically all wood exporting countries, competition thus being very heavy. The USSR has established itself as a leading exporter to the Middle East. Some conclusions of the increase potential in the Mediterranean countries mentioned here can be drawn from a comparison between per capita consumption of wbp and GNP in major producing countries of Western Europe, see annex VI.

V. Other Observations and Comments

ŠIPAD has sufficient raw materials to supply its present board production and no shortage in the future can be foreseen. Raw material is not a restraining factor for capacity expansion.

ŠIPAD's production units for particleboard are excellent.

Plywood, blockboard and fibreboard production units in ŠIPAD are old and small, though there is a reinvestment plan for new peeling machinery in the plywood factories. This plan is under implementation.

In the ŠIPAD particleboard and fibreboard factories the degree of value addition is low. Where efforts of adding values have been made, the market has been reluctant in accepting the products thus upgraded.

ŠIPAD plywood products are semifinished to a reasonable extent but the spectrum of upgrading is small, mainly only impregnated paper films bounded to plywood sheets for shutterings or containers. With more various surface treatment, new markets could be reached.

Practically all particleboard manufactured by ŠIPAD is used for the manufacture of furniture, nothing goes to joinery and a very small quantity is used in the prefab house production. For construction purposes particleboard is not used at all, neither in shutterings or concrete form work nor in constructive parts of buildings. Here large latent markets are waiting.

At present, discussions are taking place of merging the Krivaja operations into ŠIPAD. Krivaja has a MDF factory with a nominal capacity af 70 000 m3.

Today little attention seems to be given within ŠIPAD to such properties as fire resistancy and flame retardancy of wood based panels. When introduced for construction purposes, the question of fire resistancy will be raised, sooner or later. Proposals of new regulations for building are under way and they are likely to deal with the fire resistancy of building materials in a less liberal way than the regulations now in force. Regulations will probably affect such products as cupboards, wardrobes and kitchen fitments too.

The expert has considered the introduction of cement bonded particleboard into the ŠIPAD production program. As seen in VI. Marketing strategy for particleboard, cement bonded particleboard does not fit into the short and medium term program. In the long term strategy cement bonded particleboard could be an important product to get the market to accept particle board as a full value building material.

For shutterings and concrete formwork particleboard could very well be used if semifinished or fully finished. However, particleboard is not used for that purpose today in Yugoslavia. If ŠIPAD would launch particleboard for the purpose it could affect the sales of ŠIPAD plywood negatively.

The ŠIPAD blockboard factories, though mostly small and not quite modern, are said at present to operate at close to full capacity and with good profit. The expert finds it difficult to assume that this positive situation can last very long as blockboard manufacture is costly. When present customers find that they can get a comparative product - particleboard with or without added values - at a considerably lower price, demand for blockboard will weaken. This has occurred already in Scandinavia and western Europe where manufacturers have not been able due to production costs to keep their markets during the last years.

The Yugoslav authorities have set strict anti-pollution goals to be achieved by the wet process fibreboard industry. These requirements will be sharpened gradually. The expert in discussion with ŠIPAD officers has agreed to supply ŠIPAD data and addresses of companies and individuals in Scandinavia who can provide technical expertise in closed process systems based on experience.

RECOMMENDATIONS

On the basis of the findings the expert recommends the following marketing strategy, developemnt plan and actions to be taken:

VI. Marketing strategy

ŠIPAD particleboard is directed towards domestic use

a) in the furniture and joinery industry

primarily to supply ŠIPAD's own furniture and joinery plants

secondly to supply external furniture and joinery plants in BiH and the rest of Yugoslavia

ŠIPAD launches particleboard as a material for built in cupboards, wardrobes and kitchen units. Cupboards and wardrobes are delivered ready-to-paint or vinyl faced, kitchen units are delivered faced with vinyl or wood veneer.

This market strategy is recommended both for the immediate future and long range.

b) in construction and building

To make a gentle start on a market with no previous experience of particleboard for construction and building purposes, ŠIPAD launches particleboard for interior walls and floors. This strategy is recommended for the short and medium term (1 - 5 years). For the long range the expert recommends that ŠIPAD launches particleboard as a full value building material, extending its use to e.g. roofing and load bearing walls.

ŠIPAD plywood and blockboard need no major change in marketing strategy. Due to the present instable situation on the plywood market, this strategy ought to be revised after say one or two years.

Thus ŠIPAD, like it has done in the past, dedicates around 80 per cent of its plywood and blockboard production to the domestic market after having kept for internal use what ŠIPAD needs for its own furniture and joinery manufacture.

External sales of plywood should aim at the markets for shutterings, containers and so on but could be extended also to be used as concrete form work and in other areas where moisture resistancy and surface strength is required e.g. interior walls in farm buildings. "Plywood is the ŠIPAD material for outdoor and wet conditions."

Exports concentrated on the Mediterranean region.

ŠIPAD fibreboard is described as an alternative in certain situations - not to be defined here - to particleboard and as ŠIPAD's thermo product (insulation board).

Short term

The usage of fibreboard in ŠIPAD's factories for final products is reduced and replaced mainly by particleboard (thin particleboard at first hand).

Sales of total fibreboard production is directed to customers outside ŠIPAD.

Plain hardboard and hardboard with veneer or plastic laminated decorative surface (Lesodekor) is sold to customers in Yugoslavia and abroad, preferably in the Mediterranean region.

For the domestic market the Foča fibreboard is launched as an interior wall material with excellent insulation properties. Working name here "ŠIPAD thermo board".

Medium term

Plain hardboard and decorative fibreboard - marketing strategy unchanged in comparison to short term.

For thermo board, growing demand is met by a new production capacity and new alternative qualities.

Long term

Marketing strategy unchanged as compared to medium term.

VII. Development plan for ŠIPAD's wood based panels

The frames of a development plan for ŠIPAD's wood based panels have been given in chapter V. "Marketing strategy".

The development plan arranged in accordance with the calendar for its implementation is as follows:

Autumn 1978 - Feasibility study for a new insulation board line in Foča to be started. Basic assumption: 25 000 m3. Closed process system. Estimated investment costs: US $ 10 million.

Autumn 1978/ winter 1979 Equipment for melamine coating of particle board installed to cover ~ 50 per cent of ŠIPAD's production of particleboard, equipment to be concentrated to two, possibly three, plants, one of which should be the Foča thin board factory (purchases contracted summer 1978).

Equipment for vinyl facing of particleboard is installed in one factory (purchase contracted summer 1978).

Spring 1979 - Final decision on the new insulation fibre board line in Foča. Detail project work and construction work on site start.

Summer 1979 - Start of production of fire resistant particle board. At this stage for interior walls, cupboards, wardrobes and kitchen units. Minimum fire resistancy requirements to be met: Yugoslav regulations then in force or decided.

Feasibility study for a new particleboard factory to be started. Basic assumption: 100 000 m3 three-layer boards of standard thicknesses 8 - 22 mm. Facilities for surface treatment. Estimated investment costs: US $ 35 million.

Autumn 1979 - Final decision on the new particleboard project. Detail project work and construction work on chosen site start.

Winter 1980 - Total production and sales of ŠIPAD thermo board reaches 5 000 m3/year and cover the total insulation board capacity by this time.

Spring 1980 - Start up of the new insulation board line in Foča.

A new thermo board is introduced - insulation board with thin particleboard surface layers on each side. Same thickness as the previous ŠIPAD thermo board. Thermo board also offered with a double insulotion board layer.

Spring 1981 - Total production and sales of ŠIPAD thermo board qualities reaches 20 000 m3/year. Insulation board not further processed into thermo board is sold as plain insulation material on domestic and export markets.

Summer 1981 - Start up of the new particleboard factory.

Production plan 1978 - 1982 in 000 m3

Type of board	1978	1979	1980	1981	1982
Particleboard	200	220	230	260	330
Fibreboard	42	45	60	70	70
Plywood	53	55	55	55	55
Blockboard	40	42	42	42	42
Total	335	362	387	427	497

The expert suggests that a new complete 6 years long term plan for ŠIPAD's wood based panels covering objectives, strategy, production and sales be elaborated in late 1980 and 1981 to form the basis for operations during the period 1982 - 1987.

VIII. Actions to be taken in the immediate future (= 1978)

The expert recommends that ŠIPAD starts screening of feasible additives for fire resistancy and flame retardancy as soon as possible. Production or purchases of chosen additives ought to start in the first quarter of 1979.

A sales promotion campaign for ŠIPAD thermo board ought to be planned in detail during the second quarter of 1978 and carried out during summer and autumn 1978. The campaign should be carried out as an information programme to give consumers basic data of properties of wood and wood based materials in buildings and households.

In the third quarter of 1978 detail planning ought to be made for the sales promotion campaign to extend the use of particleboard into joinery units and construction/buildings. The campaign then is carried out in the fourth quarter as concerns joinery and widened to construction and building (interior walls and floors) in the first quarter of 1979.

Feasibility study on the new particleboard project ought to start during the fourth quarter of 1978. Feasibility team should be chosen in the third quarter.

Note to chapters VI-VIII

If negotiations regarding the Krivaja operations result in a merger of these operations into ŠIPAD, the market strategy for ŠIPAD's wbp must be revised to include the Krivaja panels and to make sure that ŠIPAD's total marketing strategy and production development plan is adequate to the new situation.

Annex I

JOB DESCRIPTION
DP/YUG/73/006/11-03/N/31.7.A

Post title:	Consultant in the Marketing of Wood Based Panels
Duration:	One month
Date required:	As soon as possible
Duty station:	Sarajevo, with travel to Geneva
Purpose of project:	To assist in the development of the secondary wood products industries (mainly furniture and joinery) in the Republic of Bosnia-Herzegovina

Duties:

The Consultant will be attached to the top management of ŠIPAD, and will advise it on long-term market trends and policies for the development of production capacity for wood based panels within ŠIPAD both for the medium and long range. In particular, the Consultant will lead a team of ŠIPAD marketing staff in undertaking the following tasks:

1. Assess the exact present production capacity of ŠIPAD plants for wood based panels (plywoods, blockboard, fibre board and particle board).
2. Compile information on the present demand for wood based panels in Yugoslavia, and forecast demand for 1980, 1990 and 2000 for wood based panels as a whole (and, if possible, for such type of board separately).
3. Compile detailed information of ŠIPAD's present and past markets for wood based panels.
4. Compile information on demand for wood based panels basically in Europe but also for the rest of the world (based on the work of the ECE/FAO Timber Committee and/or other sources).

On the basis of the above, the Consultant shall:

5. Recommend ŠIPAD's marketing strategy for wood based panels both for the immediate future and the long-range.
6. Suggest a plan for the development of ŠIPAD's production capacity for wood based panels.

7. Recommend the actions to be taken by ŠIPAD and the Yugoslav authorities to assure the speedy implementation of his proposals.

Qualifications: Economist or marketing specialist with considerable experience in the marketing of wood based panels in demand and consumption projections at the national and/or regional level desirable

Language: English

Background information: The furniture and joinery industries of Bosnia and Herzegovina contribute about 8 per cent to the Republic's gross national product, and represent over 4 per cent of its exports. An ambitious 5-year development plan is being implemented to double the production of furniture to attain DIN 2,000 million and increase the work force from 6,000 to 9,000 persons. This plan calls for an investment of Din 800 million. Joinery production will increase from Din 200 million to Din 650 million and the work force will treble to attain 4,500 persons. Investment of Din 950 million is foreseen for joinery plants ($US 1 = Din 17.5). ŠIPAD, a co-operative integrated Forest Industry Organization consisting of 126 factories and employing 55,000 persons, accounts for 65 per cent of saw-milling and 85 per cent of the final products of the wood industries of Bosnia and Herzegovina.

This Organization controls 38 furniture and joinery plants, sawmills, wood based panels plants (plywood, blockboard, hardboard and particle board) with an installed capacity of over 350,000 m^3 per year, prefab house plants, etc. The Government of Bosnia-Herzegovina and the ŠIPAD organization have requested UNDP/UNIDO assistance in the development of this industrial sector.

Annex II

REVIEW OF PLAN FOR SALES OF WOODEN BOARDS BY DIRECTIONS
IN 1977 AND 1980

	Export					Consumption in SIPAD					Domestic Market							Total
	1977	1980	3:2	% part 1977	80	1977	1980	8:7	% part 1977	80	1977	1980	13:12	% part 1977	80	1977	1980	18:17
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
PLYWOOD	7000	7000	100	13	11	8000	11850	148	15	19	38000	43150	113	72	70	53000	62000	117
PARTICLEBOARD	-	30000	-	-	11	78750	120500	152	44	44	101250	124500	123	56	45	180000	275000	153
M D F	-	-	-	-	-	-	5000	-	-	-	-	-	-	-	-	-	5000	-
FIBREBOARD	7000	7000	100	17	15	2550	4400	172	6	8	32450	37400	115	77	77	42000	48800	114
BLOCKBOARD	7000	7000	100	22	17	1250	6700	536	4	17	23750	26300	111	74	66	32000	40000	140
TOTAL	21000	51000	243	-	-	90550	148450	157	-	-	195450	231350	118	-	-	307000	430800	140

Annex III

REVIEW OF CONSUMPTION OF WOODEN BOARDS BY PURPOSES IN THE FINAL PRODUCTION OF ŠIPAD

	FURNITURE			JOINERY			PREFAB HOUSES			TOTAL		
	1977	1980	3:2	1977	1980	6:5	1977	1980	9:8	1977	1980	12:11
1	2	3	4	5	6	7	8	9	10	11	12	13
PLYWOOD	3600	5600	156	4200	5650	134	200	600	300	8000	11850	148
PARTICLEBOARD	75000	112000	149	-	1500	-	3750	7000	187	78750	120500	153
M D F	-	5000	-	-	-	-	-	-	-	-	5000	-
FIBREBOARD	2150	3800	177	200	150	75	200	450	225	2550	4400	172
BLOCKBOARD	700	4700	671	150	1200	800	400	800	200	1250	6700	536
TOTAL	81450	131100	161	4550	8500	187	4550	8850	194	90550	148450	164

Annex IV

A. Thicknesses and dimensions of plywoods in relation to quantities and different utilization (1977 production)

Dimensions	Thickness	Quantity in m3	End use
250 x 122 cm x	6 - 27 mm	30 500	shutterings
220 x 122 cm x	4 - 5 mm	10 000	furniture & joinery
201 x 86 cm x	4 mm	10 000	furniture & joinery

B. Thicknesses and dimensions of blockboard in relation to quantities and different utilization (1977 production)

Dimensions	Thickness	Quantity in m3	End use (assumed)
250 x 122 cm x	16 - 22 mm	13 500	furniture
350 x 170 cm x	16 - 22 mm	10 100	walls, doors
510 x 205 cm x	16 - 22 mm	8 300	walls

Annex V

Total per capita consumption of wood-based panels in cubic-meters/1000 in some countries in 1977

	Total	Particle board	Plywood/Blockboard	Fibreboard
Fed. Rep. Germany	120,2	98,4	12,9	8,9
UK	50,8	27,2	16,4	7,2
France	51,7	35,3	12,0	4,4
Italy	39,0	28,7	6,3	4,0
Poland	60,6	32,6	7,3	20,7
Czechoslovakia	64,6	38,2	11,7	14,7
Austria	86,4	75,7	1,8	8,9
Greece	30,1	21,1	6,8	2,2
Rumania	48,5	30,0	7,7	10,8
Bulgaria	43,7	30,7	6,2	6,8
Hungary	38,5	27,7	3,1	7,7
Turkey	10,5	7,9	1,2	1,4
Yugoslavia	40,4	29,4	7,7	3,3

Sources: ECE Timber Commitee 33 th session
Economist's Yearbook 1978

Annex VI

Per capita consumption of wbp compared to GNP per capita in some major producing countries of Western Europe and GNP per capita in some possible Yugoslav markets

	Per capita consumption	GNP per capita (US$)	Population
Fed. Rep. Germany	120.2	6,500	62.0
France	51.7	5,700	60.0
Italy	39.0	3,100	57.0
Sweden	154.8	7,700	8.2
Finland	128.1	5,600	4.8
Algeria		800	17.5
Egypt		280	40.0
Tunisia		725	6.0
Turkey		1,050	41.0
Morocco		350	18.0
Libyan Arab Jamahiriya		2,800	3.0

Sources: ECE Timber Commitee 33th session
Economist's Yearbook 1978

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