

TOWARDS A SUSTAINABLE
Paper
Cycle

Sub-Study Series

1a Fiber Sourcing Analysis
for the Global Pulp and
Paper Industry

**Wood Resources
International Ltd**



International
Institute for
Environment and
Development



**FIBER SOURCING ANALYSIS FOR THE
GLOBAL PULP AND PAPER INDUSTRY**

WOOD RESOURCES INTERNATIONAL LTD

Reston, Virginia , USA

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FIBER SOURCING ANALYSIS FOR THE GLOBAL PULP AND PAPER INDUSTRY

Background:

IIED commissioned Wood Resources International Ltd to undertake this study for the "Sustainable Paper Cycle" project. The study required a snapshot evaluation of current sources of fiber to the global pulp and paper industry.

Objective:

The Objective of this task, the first of two to be undertaken by Wood Resources International Ltd., was to construct a global model, on a country by country basis, of the current sources of fiber used in the production of pulp.

Methodology:

Using public data sources such as the U.N. Food and Agricultural Organization (FAO), Pulp and Paper International Magazine, and a purchased data base of deinked pulp capacity and estimated production, we were able to estimate the total volume of pulp produced in each country for 1993. We then subtracted deinked pulp production, and pulp based on non-wood fibers such as bagasse or straw, to determine the 1993 production of wood based pulp. Total wood pulp production was then allocated by pulping process (chemical, semi-chemical, mechanical) based on either actual production by process, or capacity by process, to derive a total wood fiber demand in Oven Dried Metric Tonnes for 1993.

Finally, we researched each country to determine the characteristics of wood used in pulp production. Wood supply was classified as being conifer or hardwood, roundwood or manufacturing residue. Finally the total volume of wood used was allocated to various categories of forest types, depending on the source of the material. Although it is not our intention to impose this classification scheme on follow-on research, it was necessary to establish a working classification scheme in order to consolidate and compare data. Eleven categories were established. They are listed below, and defined on page ii and iii.

Forest Categories

Hardwood Original Forest
Hardwood Indigenous Plantations
Hardwood Exotic Plantations
Hardwood Managed Natural Regeneration
Hardwood Un-Managed Natural Regeneration
Mixed Tropical Hardwood

Conifer Original Forest
Conifer Indigenous Plantations
Conifer Exotic Plantations
Conifer Managed Natural Regeneration
Conifer Un-Managed Natural Regeneration



FIBER SOURCING ANALYSIS FOR THE GLOBAL PULP AND PAPER INDUSTRY

Forest Categories:

Original Forest - A forest generally not yet harvested by man for forest products, or cleared for agricultural use.

Original forests remain in several regions of the world. In the northern hemisphere, they are represented primarily by the boreal conifer (*Picea-Abies-Pinus-Larix*) forests of Russia, Canada, northern China, and parts of the U.S. Northwest. In the southern hemisphere, they are represented by some tropical hardwood forests in the countries of central South America, Equatorial Africa, and Southeast Asia. Although some natural regeneration forests exist in tropical hardwood areas, the forest category - Mixed Tropical Hardwood - utilized in this analysis is a sub-set of Hardwood Original forests. In southern hemispheric countries such as Chile, Argentina, and Australia, some temperate hardwood forests (*Nothofagus, Eucalyptus*) may also be classified as original forest.

Indigenous Plantations (I) - Forests of local species planted after harvesting or site preparation activities.

Exotic Plantations (E) - Forests of exotic species planted after harvesting or site preparation activities

Natural Regeneration - A least second-growth forests regenerated from seed or coppice.

Natural regeneration forests are the largest source of wood fiber to the global pulp and paper industry. The structure of such forests depends on regional species composition, and ecological conditions. Natural regeneration forests may be under even-aged, uneven-aged, or no management.

In Europe, natural regeneration forests generally consist of mixed temperate conifer and hardwood species such as *Picea Abies, Pinus Sylvestris, Abies spp., Quercus spp., and Fagus Sylvatica*. In some areas, *Betula spp.* may also play a role, particularly in northern climates, or on former agricultural lands.

In North America, a similar but broader mixed of temperate conifer and hardwood species naturally regenerate a cut-over area. They include *Pinus spp., Abies spp., Picea spp., Pseudotsuga Men., Tsuga spp., Quercus spp., Acer spp., Fagus spp., Betula spp., Liriodendron spp., Populus spp., Prunus spp., Fraxinus spp., and Carya spp.* Russian natural regeneration forests closely resemble those of Scandinavia in the west, and those of North America, in the Russian Far East. Natural regeneration forests in Asia generally consist of low quality tropical hardwood species, and native *Eucalyptus* forests in Australia.



FIBER SOURCING ANALYSIS FOR THE GLOBAL PULP AND PAPER INDUSTRY

Managed Forests -

Forests currently under a formal forest management plan depicting such things as stand structure, age class distribution, and silvicultural prescriptions.

Other Working Definitions

ODMT:

Oven Dried Metric Tonne - 2204 pounds of fiber at 0% moisture content.

Pulp Yields:

The following average yields have been used to convert wood pulp production to wood fiber demand.

Chemical -	2.17 ODMT per tonne of pulp
NSSC/SemiChem -	1.28 ODMT per tonne of pulp
Thermo-mechanical -	1.09 ODMT per tonne of pulp
Groundwood -	1.06 ODMT per tonne of pulp



FIBER SOURCING ANALYSIS FOR THE GLOBAL PULP AND PAPER INDUSTRY

Unique Aspects of this Analysis:

"Snapshot" Analysis

The base year for our effort was 1993. The figures in this report represent our best estimates of the wood fiber used for pulp production in that year. Because it can take 50-75 years for a forest to reach biological maturity, the structure of forests in 1993 in part reflects forest management decisions that were made early in this century. This is a "snapshot" analysis, which if undertaken in 1983, or 2003 would have yielded very different results.

For example, a similar analysis in 1983 would have reflected much lower use of deinked pulp, and plantation wood fiber, and higher demand on original conifer forests. It is also likely that the percentage of managed natural regeneration forests would have been slightly lower than was estimated in 1993. If this analysis were undertaken again in 2003, we would expect to see higher levels of deinked pulp, and plantation fiber, as industrial plantations established during the 1980's throughout South America, Asia, and Africa begin to mature.

Two additional factors could change the structure of the global fiber supply in the future. They are: 1) world trade of wood fiber from producing to consuming regions and 2) the availability of land for intensive plantations.

Wood Fiber Trade

As much as 55 million cubic meters of pulpwood and wood chips are traded each year in the world. As shown on pages 6-8, the major consuming regions are Asia (net importer of 21.4 million cubic meters per year), and Europe (net importer of 6.3 million cubic meters per year). Major export regions include North America (+9.8 million cum), Russia (+6.6 million cum), and Oceania (+6.1 million cum).

Trade may be defined as either "boarder" trade, which is basically the extension of a natural procurement zone across political boundaries, or "ocean" trade, which may involve the movement of wood around the world. Trade is driven primarily by greater than freight-equalized wood cost differentials between countries. For example, it is currently cheaper for the Japanese to import hardwood woodchips from the U.S. South (CIF price of US\$ 158 per ODMT), than it is to harvest their own hardwood (chip plant price of US\$ 193 per ODMT). Unless phytosanitary (insect/disease) restrictions limit trade, the global tendency is to procure wood fiber from its cheapest source.

A unique feature of wood fiber trade in the Pacific Rim is the trade of wood in chip, rather than roundwood form. Although as much as 70% of the chips that are imported into this region are roundwood chips, as opposed to manufacturing residues, use of chips evolved from the first movements of conifer sawmill residues to Japan from the U.S. Pacific Northwest in the 1960's. In contrast, the majority of wood fiber imported into Europe (primarily Scandinavia) is imported in roundwood form.



Global trade of wood fiber is expected to modestly increase over the next 10 years as the cost differential between industrial plantation fiber, and traditional fiber sources widens. However, in the longer term, it is anticipated that primary production capacity will shift toward those countries supporting plantations due to competitive production costs, and better access to expanding markets.

Industrial Plantations

The 1970's and 1980's was a period of rapid growth in the establishment of industrial plantations as reflected by the fact that nearly 30% of global wood-based pulp production in 1993 was based on industrial plantation fiber. Growth rates for these plantations range from an average of 25-30 cubic meters per hectare per year for Eucalyptus in Brazil, to 3-5 cum/ha/year for Spruce in Scandinavia. Hardwood plantations are primarily based in the southern hemisphere and average 15-20 cum/ha/year. Conifer plantations are generally managed on a longer rotation (20-40 years), and, taking into account plantations in both the northern and southern hemisphere, average less than 10 cum/ha/year.

Using an average growth rate of 15 cum/ha/year, it is easily calculated that the world's 1993 wood fiber demand could be supplied from a total industrial plantation area of 41 million Ha. - or approximately 1.5% of the world's total closed forest area of approximately 3 billion ha. At an average growth rate of 10 cum/ha/year, 62 million ha. of industrial plantations are required. This is equal to approximately 2% of the world's closed forest area, or a land area 2.5 times the size of the U.K., but somewhat smaller than the U.S. state of Texas.

As previously mentioned, the percentage of production based on such fiber crops is expected to increase significantly in the coming decades due to the:

- + Continued withdraw of original and natural regeneration forests from industrial production,
- + Homogeneity of plantation raw material (density, fiber length, extractives), and
- + High yield, and short rotation of most industrial plantation forests.

The only constraining factor may be the availability of suitable land, which must have reasonably good soils, and abundant rainfall. Although land is less available than when industrial plantations were first established, it is anticipated that marginal agricultural land (e.g. sugar cane land), will become available in many countries over the next 10-20 years, and provide opportunities for new forest plantation investments.

Information

As far as we are aware, this is the first study that has tried to determine the source of fiber for pulp production on a global basis. As few, if any, pulp producers have any incentive to record or make public their sources of fiber, this effort is not without estimates. We have found discrepancies in published estimates of total pulp production, non-wood pulp production, and deinked pulp capacities. There is no uniform data concerning harvests by forest type for any country that we are aware of. Our work is based on our, and our contact's first-hand knowledge of forest types in each country, and the likely percentage of wood from various sources that is used in pulp production. We analyzed fiber sources in major pulp producing regions in greatest detail, and are confident that our overall assessment is an accurate reflection of global wood fiber demand in 1993.



KEY FINDINGS AND CONCLUSIONS

- The global pulp industry produced approximately 185.5 million tonnes of pulp in 1993 from approximately 1350 major pulpmill installations. Of total production, approximately 11% was based on recycled fiber as a result of de-inking facilities. An additional 8% was based on non-wood fiber such as straw, bagasse and bamboo. Total pulp based on virgin wood fiber was estimated at 149.8 million tonnes, or approximately 81% of total production.
- By far the largest single non-wood pulping fiber used on a global basis is straw - accounting for nearly 47% of all non-wood fiber consumed for pulp production in 1993. Other non-wood fibers include bagasse (12%), bamboo (6%), and a wide assortment of "other" fibers ranging from rags to seaweed. Non-wood pulp in Asia accounts for approximately 90% of all non-wood pulp manufactured world-wide, and accounted for nearly 40% of the fiber based pulp manufactured in that region in 1993.
- The production of wood pulp required approximately 277 million ODMT of wood fiber in 1993, or approximately 618 million cubic meters of wood. Nearly one third of this volume (31%) consisted of hardwood species such as Oak (*Quercus*), Birch (*Betula*), and Maple (*Acer*). The balance consisted of conifer species such as Pine (*Pinus*), Spruce (*Picea*), and Fir (*Abies*). Approximately 37% of wood consumption was in chip form, from manufacturing residues (27%), or off-site chipping operations (10%). The balance, 63%, consisted of roundwood pulpwood supply.
- Trade of wood fiber for pulp production was estimated for 1993 at 50 million cubic meters, or 8% of total wood fiber consumption. This is down from 10-12% in 1990-1992 as falling pulp and paper prices reduced operating rates and margins, and made typically higher cost off-shore fiber less attractive to traditional import-oriented producers.
- On a global basis, Managed Natural Regeneration forests account for the largest source of wood used in the production of pulp (39% of hardwood consumed, 36% of conifer consumed, and 37% of total wood fiber). These forests are typically found in W. Europe, Scandinavia, and the United States, which combined, account for nearly 60% of global wood based pulp production.
- Although Exotic plantations virtually support wood based pulp production in Africa, Oceania, and South America, their share of total wood based pulp production is only 19% for hardwood, 7% for conifer, and 11% of total wood pulp production. Plantations of indigenous species, in fact, account for a larger share (18%), of global wood pulp production.



KEY FINDINGS AND CONCLUSIONS Cont.

- Mixed Tropical Hardwood forests (often referred to as "Tropical Rainforests") and Original Hardwood Forests (such as the native hardwood forests of Chile, and the native Eucalyptus forests of Australia), support only 2% of global wood based pulp capacity. Original Conifer forests, conversely, are a significant source of raw material, and were estimated in 1993 to provide approximately 15% of the fiber used to produce wood based pulp on a global basis.
- 1993 fiber supply to the wood-based pulp industry by major forest type was estimated as follows:

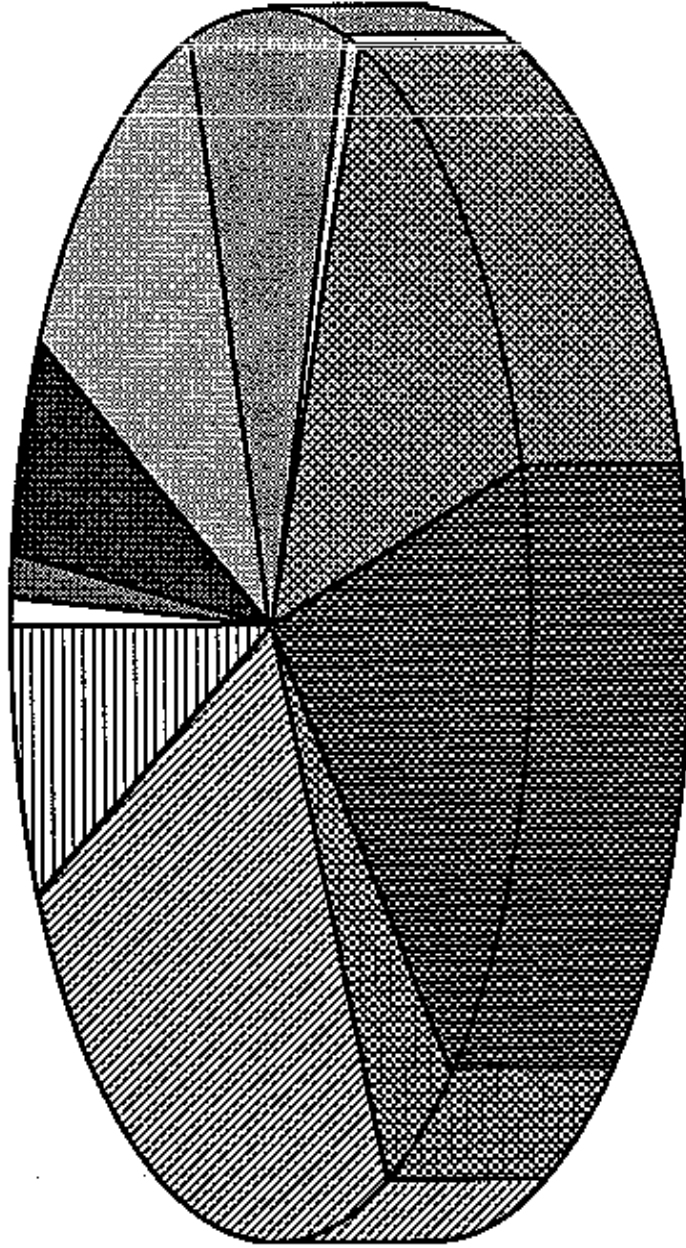
<u>Forest Type</u>	<u>% of Total</u>
Hardwood Original Forest	1
Hardwood Indigenous Plantations	1
Hardwood Exotic Plantations	6
Hardwood Managed Natural Regeneration	12
Hardwood Un-Managed Natural Regeneration	10
Mixed Tropical Hardwood	1
Conifer Original Forest	15
Conifer Indigenous Plantations	17
Conifer Exotic Plantations	5
Conifer Managed Natural Regeneration	25
Conifer Un-Managed Natural Regeneration	7
Total	100

GLOBAL PULP-WOOD CONSUMPTION BY FOREST TYPE - 1993
(000 CUBIC METERS)

	ASIA	AFRICA	OCEANIA	N.AMER.	S/C.AMER.	W.EUR.	E.EUR.	CIS	TOTAL
<u>Hardwood</u>									
Original Forest	1600		225	6332	95				8252
Indigen. Plantations	1731					1385	16		3132
Exotic Plantations	10141	4860	185		18440	6060			39686
Mgt. Nature Regen.	13045		640	43114		13825	2362		72986
UnMgt. Nature Regen.	3500			48911		5290	105	3700	61586
Mix Tropical Hdwd.	4819			65	930				5814
<u>Conifer</u>									
Original Forest	5256			67481		1200		19750	93687
Indigen. Plantations	8756			66998	805	20977	5685		103221
Exotic Plantations	4170	4735	6995		15185	3148			34233
Mgt. Nature Regen.	5100			73082		72730	630	2500	154042
UnMgt. Nature Regen.	900			39477			592		40969
Total Hardwood	34836	4860	1050	98502	19465	26560	2483	3700	191456
Total Conifer	24182	4735	6995	247038	15990	98055	6907	22250	426152
TOTAL	59018	9595	8045	345540	35455	124615	9390	25950	617608
Residue Percent	65	4	19	44	7	24	9	23	37*
Roundwood Percent	35	96	81	56	93	76	91	77	63

* 27% Manufacturing residues: 10% Roundwood Chips

**GLOBAL PULP-WOOD CONSUMPTION BY FOREST TYPE - 1993
(PERCENT)**



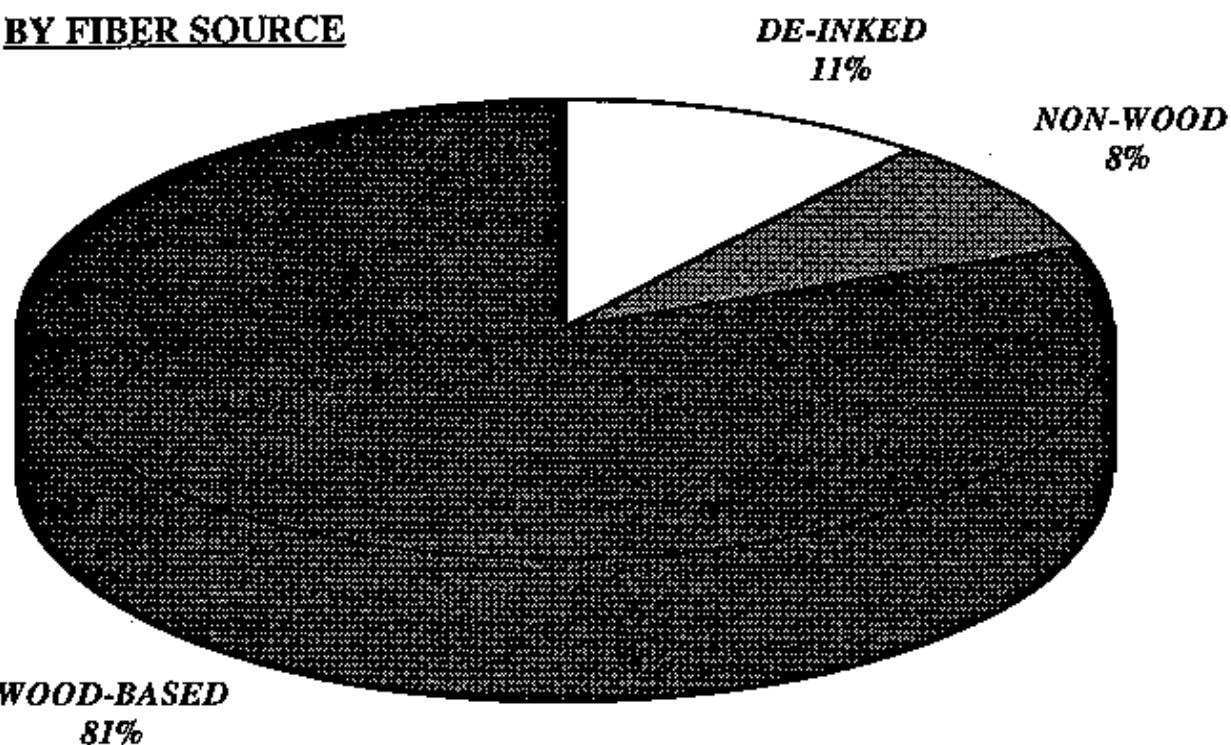
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- Con. Mgt. Nat. Reg.
- Con. UnMgt. Nat. Reg.



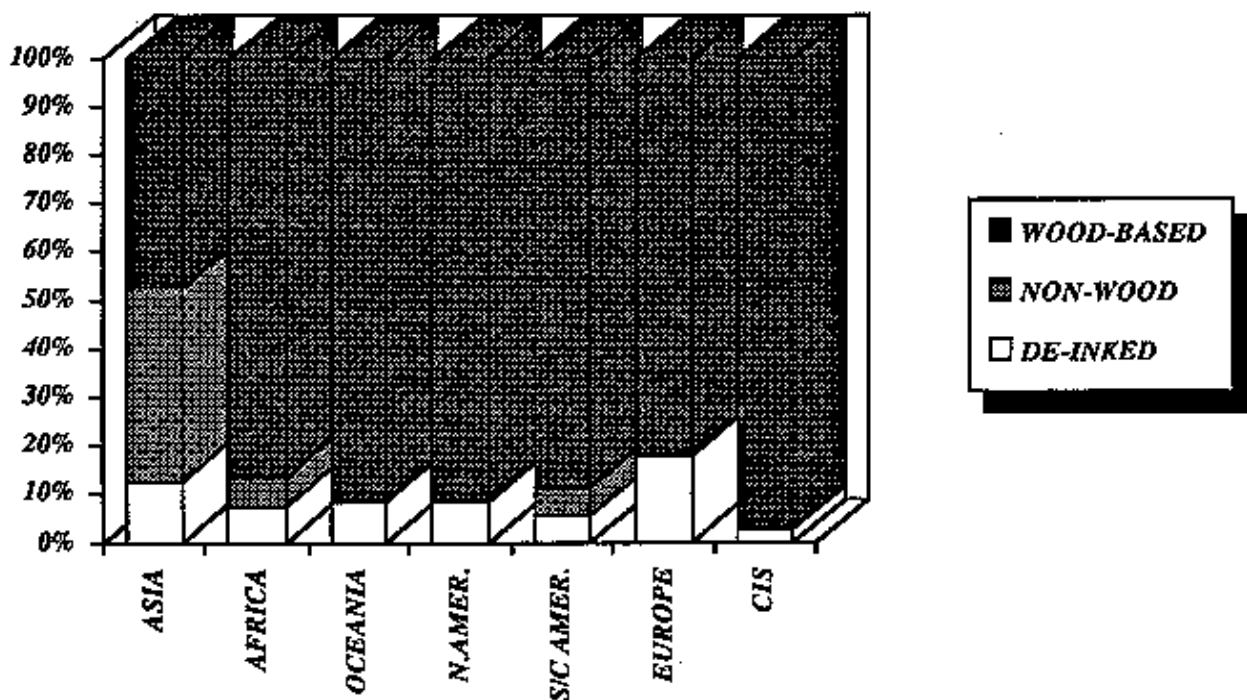


ESTIMATED DISTRIBUTION OF 1993 GLOBAL PULP PRODUCTION

BY FIBER SOURCE

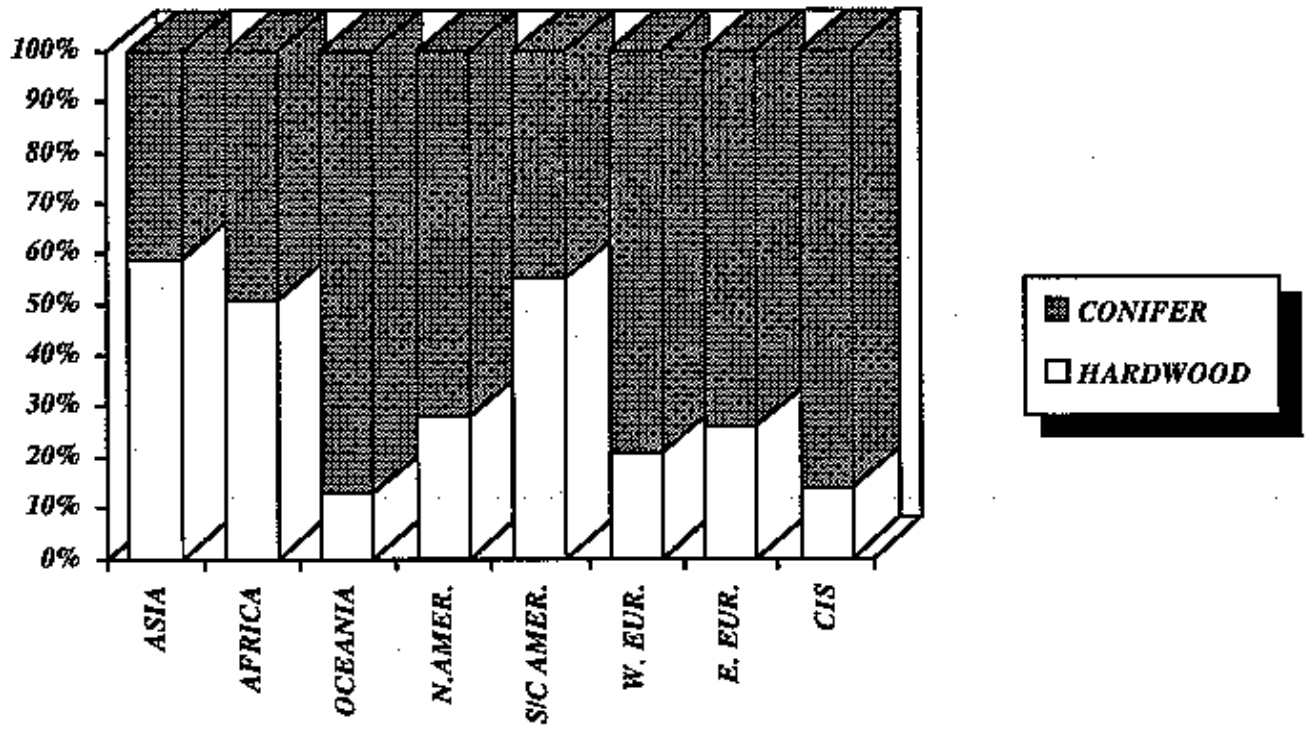
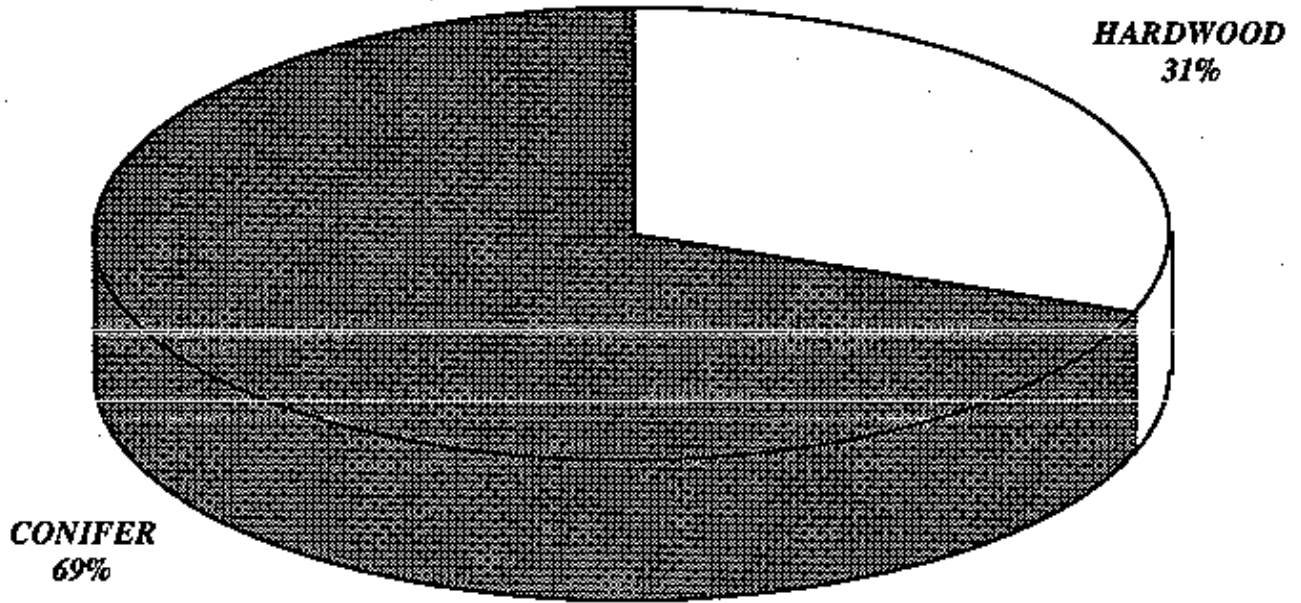


BY FIBER SOURCE AND REGION



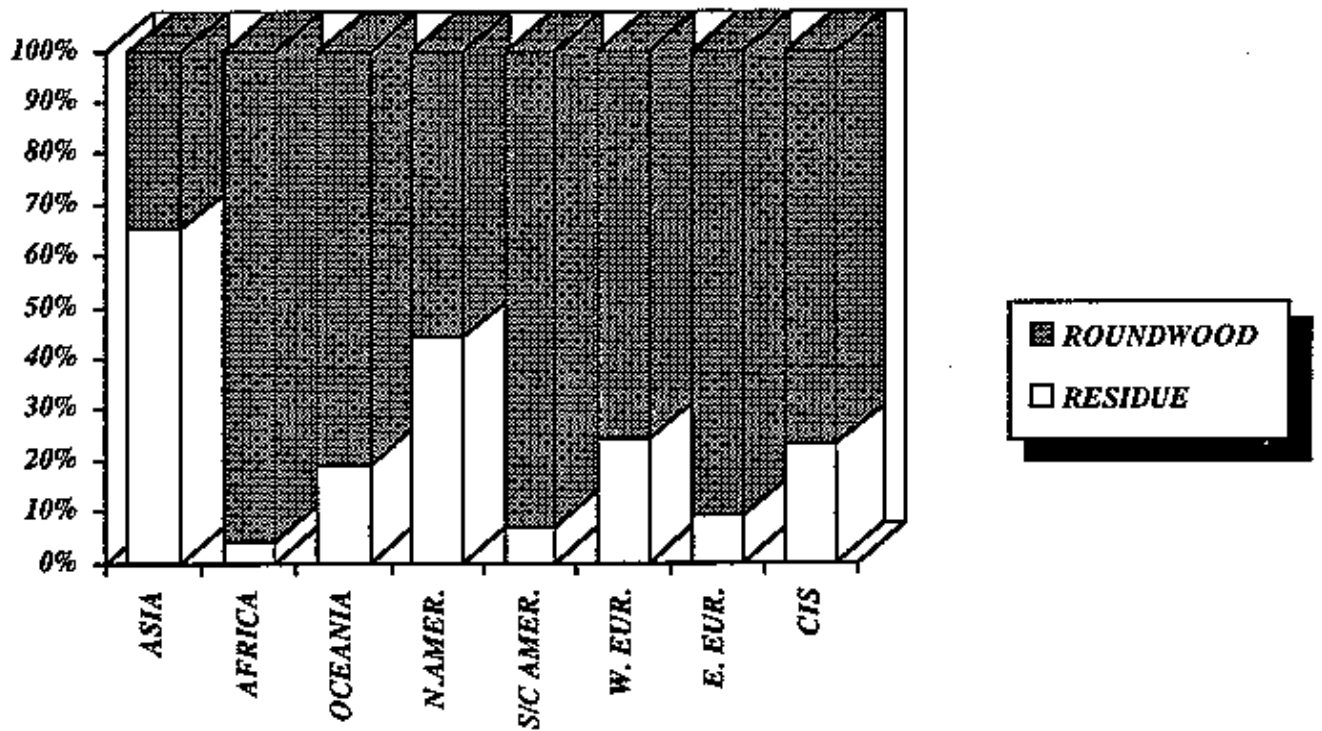
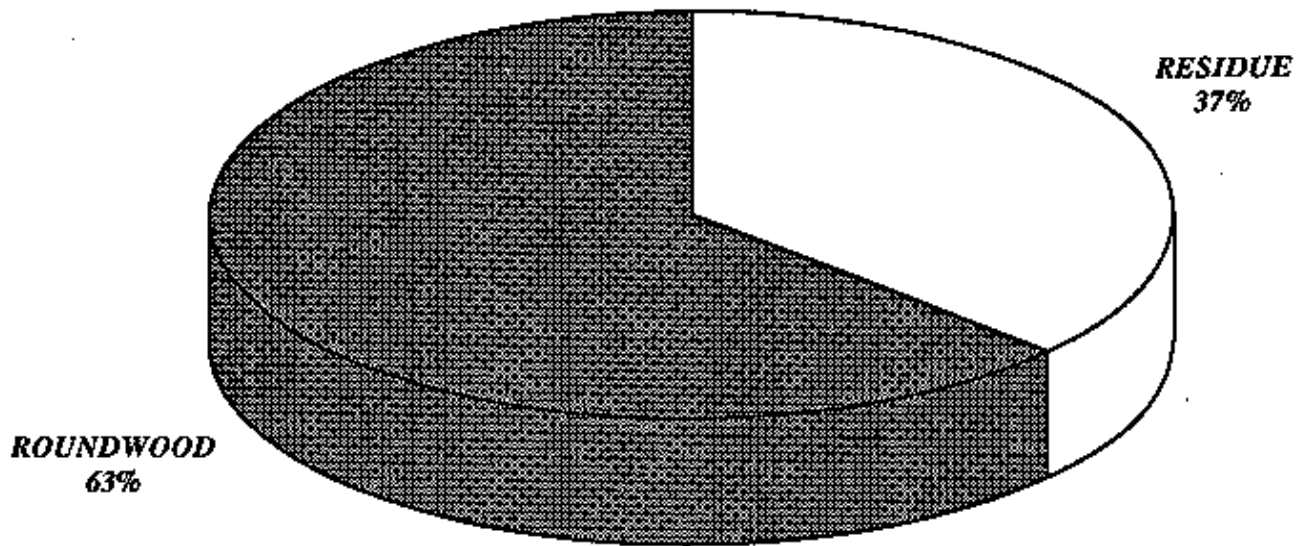


ESTIMATED DISTRIBUTION OF 1993 GLOBAL WOOD-BASED PULP PRODUCTION BY SPECIES





ESTIMATED DISTRIBUTION OF 1993 GLOBAL WOOD-BASED PULP PRODUCTION BY RESIDUE VS. ROUNDWOOD





GLOBAL PULP FIBER SUPPLY ANALYSIS - 1993

Country	No. of mills	Pulp Production			Virgin Fiber Pulp		Wood fiber demand 1000 odmt
		Total 1000 ton	Deink 1000 ton	Virgin fiber 1000 ton	Non-wood 1000 ton	Wood 1000 ton	
EUROPE							
West							
Austria	11	1974	437	1537	1	1536	2564
Belgium	3	421	114	307	0	307	440
Denmark	2	100	45	55	15	40	51
Finland	43	9628	290	9338	0	9338	16105
France	21	3315	970	2345	23	2322	4119
Germany	22	4937	2463	2474	0	2474	3587
Greece	2	49	7	42	2	40	42
Italy	19	689	220	469	80	389	479
Netherlands	2	539	480	59	3	56	61
Norway	19	2202	71	2131	0	2131	3022
Portugal	8	1553	52	1501	13	1488	3229
Spain	20	1504	326	1178	97	1081	2346
Sweden	50	10668	594	10074	0	10074	18640
Switzerland	3	505	211	294	0	294	473
UK	7	1474	874	600	0	600	657
Total West	232	39558	7154	32404	234	32170	55815
East							
Albania	1	16	0	16	0	16	33
Bosnia-Herz.	3	20	0	20	0	20	43
Bulgaria	6	127	38	89	10	79	158
Croatia	4	50	0	50	0	50	65
Czech Republic	9	427	28	399	1	398	779
Latvia	1	5	0	5	0	5	11
Lithuania	1	6	0	6	0	6	13
Hungary	3	17	0	17	12	5	6
Macedonia	1	18	0	18	0	18	39
Poland	18	776	76	700	0	700	1392
Romania	14	464	27	437	25	412	781
Serbia & Monten.	7	60	0	60	0	60	130
Slovakia	3	239	14	225	0	225	432
Slovenia	3	175	89	86	0	86	140
Total East	74	2400	272	2128	48	2080	4022
Total Europe	306	41958	7426	34532	282	34250	59837
CIS							
Russia	50	5501	147	5354	0	5354	10457



GLOBAL PULP FIBER SUPPLY ANALYSIS - 1993

Country	No. of mills	Pulp Production			Virgin Fiber Pulp		Wood fiber demand 1000 odmt
		Total 1000 ton	Deink 1000 ton	Virgin fiber 1000 ton	Non-wood 1000 ton	Wood 1000 ton	
AFRICA							
Algeria	3	12	0	12	12	0	0
Egypt	4	68	8	60	60	0	0
Kenya	2	95	25	70	0	70	112
Madagascar	1	3	0	3	0	3	6.5
Morocco	1	107	14	93	0	93	202
Nigeria	3	15	0	15	0	15	20.5
South Africa	10	2340	160	2180	100	2080	3927
Swaziland	1	171	0	171	0	171	372
Tanzania	1	36	0	36	0	36	72
Tunisia	1	14	0	14	14	0	0
Zimbabwe	3	47	5	42	0	42	50
Total	30	2908	212	2696	186	2510	4762
NORTH AMERICA							
Canada	27	24650	1470	23180	0	23180	38093
Mexico	11	528	185	343	240	103	224
USA	203	63365	5862	57503	170	57333	115480
Total	241	88543	7517	81026	410	80616	153797
CENTRAL AMERICA							
Costa Rica	1	23	7	16	0	16	17
Cuba	3	20	0	20	20	0	0
Total	4	43	7	36	20	16	17
SOUTH AMERICA							
Argentina	13	729	26	703	112	591	1122
Brazil	35	5655	121	5534	120	5414	10958
Chile	9	1940	98	1842	0	1842	3803
Colombia	10	370	49	321	131	190	360
Ecuador	1	46	19	27	27	0	0
Peru	4	80	34	46	46	0	0
Uruguay	2	26	0	26	0	26	53
Venezuela	4	232	131	101	92	9	10
Total	78	9078	478	8600	528	8072	16306



GLOBAL PULP FIBER SUPPLY ANALYSIS - 1993

Country	No. of mills	Pulp Production			Virgin Fiber Pulp		Wood fiber demand 1000 odmt
		Total 1000 ton	Deink 1000 ton	Virgin fiber 1000 ton	Non-wood 1000 ton	Wood 1000 ton	
OCEANIA							
Australia	11	1210	195	1015	0	1015	1388
New Zealand	6	1370	19	1351	0	1351	2135
Total	17	2580	214	2366	0	2366	3523
ASIA							
Bangladesh	4	83	0	83	33	50	82
China	242	13885	225	13660	12150	1510	2910
India	245	2279	44	2235	1100	1135	2233
Indonesia	14	1720	463	1257	141	1116	2260
Iran	3	115	16	99	62	37	80
Iraq	2	1	0	1	1	0	0
Japan	55	13628	2257	11371	0	11371	17780
Korea, DPR	2	40	0	40	20	20	39
Korea, Rep. of	4	1617	1170	447	0	447	760
Malaysia	1	138	54	84	0	84	183
Myanmar	2	1.6	0	1.6	1.6	0	0
Nepal	1	3	0	3	3	0	0
Pakistan	19	151	6	145	145	0	0
Philippines	5	110	30	80	15	65	142
Sri Lanka	1	17	6	11	8	3	7
Syria	1	13	0	13	13	0	0
Taiwan	3	315	0	315	31	284	617
Thailand	5	390	70	320	140	180	390
Turkey	10	371	30	341	64	277	525
Vietnam	1	45	0	45	25	20	32
Total	620	34923	4371	30552	13953	16599	28040
TOTAL, WORLD	1346	185534	20372	165162	15379	149783	276739



NON-WOOD GLOBAL PULP FIBER SUPPLY ANALYSIS - 1993

	Total 1000 ton	Bamboo %	Bagasse %	Hemp %	Cotton %	Reed %	Straw %	Other %	Species incl. in "Other"
CENTRAL AMERICA									
Cuba	20		100						
Total	20								
SOUTH AMERICA									
Argentina	112		100						
Brazil	120	34	48		x			17	Cotton/Jute
Colombia	131		95	5					
Ecuador	27		100						
Peru	46		100						
Venezuela	92		100						
Total	528								
ASIA									
Bangladesh	33	60	35		x			5	Jute/cotton
China	12150	2	4		x	x	55	39	Kenaf/cotton/reed/rag
India	1100	45	28		x		22	5	Jute/kenaf/rag/cotton
Indonesia	141	6	80				6	8	
Iran	62		65				35		
Iraq	1		27			73			
Korea, DPR	20							100	
Myanmar	1.6	100							
Nepal	3						65	35	Sabai grass
Pakistan	145		13		x		62	24	River grass/cotton/rag/kai
Philippines	15		31	69					Abaca (hemp)
Sri Lanka	8						100		
Syria	13						100		
Taiwan	31		100						
Thailand	140	58	32				5	5	Kenaf/jute/sisal
Turkey	64			x	x	x	75	25	Hemp/cotton/reed
Vietnam	25	100							
Total	13953								
TOTAL, WORLD	15379	6.0	12.1	.1	.8	0	46.6	32.6	



ESTIMATED HARDWOOD WOOD FIBER TRADE MATRIX 1993
(000 CUBIC METERS)

IMPORTER:	<u>JAPAN</u>	<u>FINLAND</u>	<u>SWEDEN</u>	<u>TAIWAN</u>	<u>S. KOREA</u>	<u>BEL/LUX</u>
EXPORTER:						
AUSTRALIA	4583	---	---	194	55	---
ARGENTINA	65	---	---	---	---	---
CHILE	3008	---	---	---	42	---
CHINA	661	---	---	130	296	---
ESTONIA	---	150	260	---	---	---
FRANCE	---	---	---	---	---	300
FINLAND	---	---	43	---	---	---
GERMANY	---	7	100	---	---	100
INDONESIA	414	---	---	600	63	---
LATVIA	---	120	278	---	---	---
LITHUANIA	---	21	117	---	---	---
NORWAY	---	---	15	---	---	---
P.N.GUINEA	141	---	---	---	---	---
POLAND	---	---	15	---	---	---
RUSSIA	42	4300	890	66	---	---
S. AFRICA	1168	---	---	---	30	---
THAILAND	200	---	---	---	---	---
VIETNAM	41	---	---	115	---	---
USA	4188	---	---	160	570	---
OTHER	275	70	14	130	14	100
TOTAL	14786	4670	1730	1395	1070	500

Source: FAO, Customs Data, WRI Ltd.



ESTIMATED CONIFER WOOD FIBER TRADE MATRIX 1993
(000 CUBIC METERS)

IMPORTER:	<u>JAPAN</u>	<u>SWEDEN</u>	<u>FINLAND</u>	<u>AUSTRIA</u>	<u>ITALY</u>
EXPORTER:					
AUSTRALIA	939	---	---	---	---
AUSTRIA	---	---	---	---	344
BRAZIL	259	---	---	---	---
CANADA	1066	---	---	---	---
CHILE	203	---	---	---	---
ESTONIA	---	160	135	---	---
FIJI	209	---	---	---	---
FRANCE	---	---	---	---	271
FINLAND	---	330	---	---	---
GERMANY	---	590	122	752	100
LATVIA	---	200	150	---	---
NEW ZEALAND	355	---	---	---	---
NORWAY	---	530	---	---	---
POLAND	---	140	84	200	---
RUSSIA	251	75	1000	---	---
USA	3812	---	---	---	---
OTHER	---	375	209	272	---
TOTAL	7094	2400	1700	1224	715

Source: FAO, Customs Data, WRI Ltd.



ESTIMATED WOOD FIBER PRODUCTION AND CONSUMPTION

BY CONTINENT - 1993

(000 CUBIC METERS)

<u>CONTINENT</u>	<u>CONSUMPTION</u>	<u>PRODUCTION</u>	<u>NET IMPORT/EXPORT</u>
ASIA	59018	37543	(21475)
AFRICA	9595	10843	1248
OCEANIA	8045	14171	6126
N. AMERICA	345540	355336	9796
S/C AMERICA	35455	39401	3946
EUROPE	134005	127740	(6265)
CIS	25950	32574	6624
TOTAL	617608	617608	0



AVERAGE DENSITIES FOR COMMON PULPWOOD SPECIES

(KILOS PER CUBIC METER @ 0% MOISTURE)

<u>SPECIES</u>	<u>OVEN DRY DENSITY</u>
Conifer	
Abies Spp.	350
Cupressus Spp.	375
Larix Spp.	500
Picea Abies	385
Picea Spp.	380
Pinus Banksiana	400
Pinus Caribaea	430
Pinus Elliottii	540
Pinus Merkusii	475
Pinus Nigra	400
Pinus Patula	425
Pinus Pinaster	450
Pinus Radiata	430
Pinus Sylvestris	380
Pinus Taeda	470
Pseudotsuga Men.	450
Deciduous	
Acacia Spp.	600
Albizia Spp.	475
Alnus Spp.	370
Betula Spp.	510
Carpinus Spp.	625
Eucalyptus Spp.	450
Eucalyptus Carnaldulensis	450
Eucalyptus Globulus	600
Eucalyptus Grandis	450
Eucalyptus Saligna	460
Fagus Syl.	510
Gmelina Arborea	350
Liquidambar Styr.	460
Mixed Tropical Hardwood	470
Nothofagus Spp.	500
Populus Spp.	370
Quercus Spp.	600
Salix Spp.	350



PULP FIBER SUPPLY ANALYSIS - 1993

REGION: AFRICA

COUNTRY: ALGERIA

Pulp Industry 1993

Number of Pulpmills	3
Total Pulp Production (1000 tonnes)	12
Deinked Pulp Production (1000 tonnes)	(0)
Virgin Fiber Pulp Production (1000 tonnes)	12
Non-Wood Pulp Production (1000 tonnes)	(12)
Bamboo	Hemp
Bagasse	Cotton
Straw	Reed
Other - 100%	
Wood-Based Pulp Production (1000 tonnes)	0
Derived Wood Fiber Demand (1000 ODMT)	0

Wood Supply Characteristics

Conifer	N/A	Hardwood	N/A
Roundwood	N/A	Residues	N/A

Forest Type

Est. Supply 1993 (1000 cum)

TOTAL



PULP FIBER SUPPLY ANALYSIS - 1993

REGION: AFRICA

COUNTRY: EGYPT

Pulp Industry 1993

Number of Pulpmills	4
Total Pulp Production (1000 tonnes)	68
Deinked Pulp Production (1000 tonnes)	(8)
Virgin Fiber Pulp Production (1000 tonnes)	60
Non-Wood Pulp Production (1000 tonnes)	(60)
Bamboo	Hemp
Bagasse - 10%	Cotton
Straw - 90%	Reed
Other	
Wood-Based Pulp Production (1000 tonnes)	0
Derived Wood Fiber Demand (1000 ODMT)	0

Wood Supply Characteristics

Conifer	N/A	Hardwood	N/A
Roundwood	N/A	Residues	N/A
<u>Forest Type</u>		<u>Est. Supply 1993</u>	(1000 cum)

TOTAL



PULP FIBER SUPPLY ANALYSIS - 1993

REGION: AFRICA

COUNTRY: KENYA

Pulp Industry 1993

Number of Pulpmills	2
Total Pulp Production (1000 tonnes)	95
Deinked Pulp Production (1000 tonnes)	(25)
Virgin Fiber Pulp Production (1000 tonnes)	70
Non-Wood Pulp Production (1000 tonnes)	(0)
Bamboo	Hemp
Bagasse	Cotton
Straw	Reed
Other	
Wood-Based Pulp Production (1000 tonnes)	70
Derived Wood Fiber Demand (1000 ODMT)	112

Wood Supply Characteristics (Cum/ODMT = 2.4)

Conifer - 85%	Hardwood - 15%
Roundwood - 100%	Residues - 0%

Forest Type

Est. Supply 1993 (1000 cum)

Conifer - (E) Plantations (Cupressus, Pinus patula, radiata)	230
Hardwood - (E) Plantations (Euc. spp.)	35
TOTAL	265



PULP FIBER SUPPLY ANALYSIS - 1993

REGION: AFRICA

COUNTRY: MADAGASCAR

Pulp Industry 1993

Number of Pulpmills	1
Total Pulp Production (1000 tonnes)	3
Deinked Pulp Production (1000 tonnes)	(0)
Virgin Fiber Pulp Production (1000 tonnes)	3
Non-Wood Pulp Production (1000 tonnes)	(0)
Bamboo	Hemp
Bagasse	Cotton
Straw	Reed
Other	
Wood-Based Pulp Production (1000 tonnes)	3
Derived Wood Fiber Demand (1000 ODMT)	6.5

Wood Supply Characteristics (Cum/ODMT = 2.3)

Conifer - 100%	Hardwood - 0%
Roundwood - 100%	Residues - 0%
<u>Forest Type</u>	<u>Est. Supply 1993 (1000 cum)</u>
Conifer - (E) Plantations (Pinus patula)	15
TOTAL	15



PULP FIBER SUPPLY ANALYSIS - 1993

REGION: AFRICA

COUNTRY: MOROCCO

Pulp Industry 1993

Number of Pulpmills	1
Total Pulp Production (1000 tonnes)	107
Deinked Pulp Production (1000 tonnes)	(14)
Virgin Fiber Pulp Production (1000 tonnes)	93
Non-Wood Pulp Production (1000 tonnes)	(0)
Bamboo	Hemp
Bagasse	Cotton
Straw	Reed
Other	
Wood-Based Pulp Production (1000 tonnes)	93
Derived Wood Fiber Demand (1000 ODMT)	202

Wood Supply Characteristics (Cum/ODMT = 2.0)

Conifer - 0%	Hardwood - 100%
Roundwood - 100%	Residues - 0%
<u>Forest Type</u>	<u>Est. Supply 1993 (1000 cum)</u>
Hardwood - (E) Plantations (Euc. Camaldulensis, Globulus, Grandis)	400
TOTAL	400



PULP FIBER SUPPLY ANALYSIS - 1993

REGION: AFRICA

COUNTRY: NIGERIA

Pulp Industry 1993

Number of Pulpmills	3
Total Pulp Production (1000 tonnes)	15
Deinked Pulp Production (1000 tonnes)	(0)
Virgin Fiber Pulp Production (1000 tonnes)	15
Non-Wood Pulp Production (1000 tonnes)	(0)
Bamboo	Hemp
Bagasse	Cotton
Straw	Reed
Other	
Wood-Based Pulp Production (1000 tonnes)	15
Derived Wood Fiber Demand (1000 ODMT)	20.5

Wood Supply Characteristics (Cum/ODMT = 2.7)

Conifer - 40%	Hardwood - 60%
Roundwood - 100%	Residues - 0%
<u>Forest Type</u>	<u>Est. Supply 1993 (1000 cum)</u>
Hardwood - (E) Plantations (Gmelina arborea)	35
Conifer - (E) Plantations (Pinus Caribaea)e	20
TOTAL	55



PULP FIBER SUPPLY ANALYSIS - 1993

REGION: AFRICA

COUNTRY: SOUTH AFRICA

Pulp Industry 1993

Number of Pulpmills	10
Total Pulp Production (1000 tonnes)	2340
Deinked Pulp Production (1000 tonnes)	(160)
Virgin Fiber Pulp Production (1000 tonnes)	2180
Non-Wood Pulp Production (1000 tonnes)	(100)
Bamboo	Hemp
Bagasse - 100%	Cotton
Straw	Reed
Other	
Wood-Based Pulp Production (1000 tonnes)	2080
Derived Wood Fiber Demand (1000 ODMT)	3927

Wood Supply Characteristics (Cum/ODMT = 2.2)

Conifer - 46%	Hardwood - 54%
Roundwood - 95%	Residues - 5% (Manf.)
<u>Forest Type</u>	<u>Est. Supply 1993 (1000 cum)</u>
Conifer - (E) Plantations (Pinus spp.)	4250
Hardwood - (E) Plantations (Euc. spp.)	4330
TOTAL	8580



PULP FIBER SUPPLY ANALYSIS - 1993

REGION: AFRICA

COUNTRY: SWAZILAND

Pulp Industry 1993

Number of Pulpmills	1
Total Pulp Production (1000 tonnes)	171
Deinked Pulp Production (1000 tonnes)	(0)
Virgin Fiber Pulp Production (1000 tonnes)	171
Non-Wood Pulp Production (1000 tonnes)	(0)
Bamboo	Hemp
Bagasse	Cotton
Straw	Reed
Other	
Wood-Based Pulp Production (1000 tonnes)	171
Derived Wood Fiber Demand (1000 ODMT)	372

Wood Supply Characteristics (Included with South Africa)

Conifer	100%	Hardwood	0%
Roundwood	100%	Residues	0%
<u>Forest Type</u>		<u>Est. Supply 1993 (1000 cum)</u>	

TOTAL



PULP FIBER SUPPLY ANALYSIS - 1993

REGION: AFRICA

COUNTRY: TANZANIA

Pulp Industry 1993

Number of Pulpmills	1
Total Pulp Production (1000 tonnes)	36
Deinked Pulp Production (1000 tonnes)	(0)
Virgin Fiber Pulp Production (1000 tonnes)	36
Non-Wood Pulp Production (1000 tonnes)	(0)
Bamboo	
Hemp	
Bagasse	
Cotton	
Straw	
Reed	
Other	
Wood-Based Pulp Production (1000 tonnes)	36
Derived Wood Fiber Demand (1000 ODMT)	72

Wood Supply Characteristics (Cum/ODMT = 2.3)

Conifer - 70%	Hardwood - 30%
Roundwood - 100%	Residues - 0%
<u>Forest Type</u>	<u>Est. Supply 1993 (1000 cum)</u>
Conifer - (E) Plantations (Pinus patula)	120
Hardwood (E) Plantations (Enc./ Acacia spp.)	45
TOTAL	165



PULP FIBER SUPPLY ANALYSIS - 1993

REGION: AFRICA

COUNTRY: TUNISIA

Pulp Industry 1993

Number of Pulpmills	1
Total Pulp Production (1000 tonnes)	14
Deinked Pulp Production (1000 tonnes)	(0)
Virgin Fiber Pulp Production (1000 tonnes)	14
Non-Wood Pulp Production (1000 tonnes)	(14)
Bamboo	Hemp
Bagasse	Cotton
Straw	Reed
Other - 100%	
Wood-Based Pulp Production (1000 tonnes)	0
Derived Wood Fiber Demand (1000 ODMT)	0

Wood Supply Characteristics

Conifer	N/A	Hardwood	N/A
Roundwood	N/A	Residues	N/A
<u>Forest Type</u>		<u>Est. Supply 1993</u>	(1000 cum)

TOTAL



PULP FIBER SUPPLY ANALYSIS - 1993

REGION: AFRICA

COUNTRY: ZIMBABWE

Pulp Industry 1993

Number of Pulpmills	3
Total Pulp Production (1000 tonnes)	47
Deinked Pulp Production (1000 tonnes)	(5)
Virgin Fiber Pulp Production (1000 tonnes)	42
Non-Wood Pulp Production (1000 tonnes)	(0)
Bamboo	Hemp
Bagasse	Cotton
Straw	Reed
Other	
Wood-Based Pulp Production (1000 tonnes)	42
Derived Wood Fiber Demand (1000 ODMT)	50

Wood Supply Characteristics (Cum/ODMT = 2.3)

Conifer - 85%	Hardwood - 15%
Roundwood - 100%	Residues - 0%
<u>Forest Type</u>	<u>Est. Supply 1993 (1000 cum)</u>
Conifer - (E) Plantations (Pinus patula, taeda, elliottii)	100
Hardwood - (E) Plantations (Euc. spp.)	15
TOTAL	115



PULP FIBER SUPPLY ANALYSIS - 1993

REGION: ASIA

COUNTRY: BANGLADESH

Pulp Industry 1993

Number of Pulpmills	4
Total Pulp Production (1000 tonnes)	83
Deinked Pulp Production (1000 tonnes)	(0)
Virgin Fiber Pulp Production (1000 tonnes)	83
Non-Wood Pulp Production (1000 tonnes)	(33)
Bamboo - 60%	Hemp
Bagasse - 35%	Cotton
Straw	Reed
Other - 5%	
Wood-Based Pulp Production (1000 tonnes)	50
Derived Wood Fiber Demand (1000 ODMT)	82

Wood Supply Characteristics (Cum/ODMT = 2.2)

Conifer - 20%	Hardwood - 80%
Roundwood - 95%	Residues - 5% (Manf.)
<u>Forest Type</u>	<u>Est. Supply 1993 (1000 cum)</u>
Conifer - (E) Plantations (Pinus spp.)	35
Hardwood - (E) Plantations (Euc. spp.)	15
Hardwood - Mixed Tropical Hardwood	125
TOTAL	175



PULP FIBER SUPPLY ANALYSIS - 1993

REGION: ASIA

COUNTRY: CHINA

Pulp Industry 1993

Number of Pulpmills	242*
Total Pulp Production (1000 tonnes)	13885
Deinked Pulp Production (1000 tonnes)	(225)
Virgin Fiber Pulp Production (1000 tonnes)	13660
Non-Wood Pulp Production (1000 tonnes)	(12150)
Bamboo - 2%	Hemp
Bagasse - 4%	Cotton
Straw - 55%	Reed
Other - 39%	
Wood-Based Pulp Production (1000 tonnes)	1510
Derived Wood Fiber Demand (1000 ODMT)	2910

* Only mills greater than 10,000 tpy included in Number of Pulpmills

Wood Supply Characteristics (Cum/ODMT = 2.5)

Conifer - 60%	Hardwood - 40%
Roundwood - 90%	Residues - 10% (Manf.)

<u>Forest Type</u>	<u>Est. Supply 1993 (1000 cum)</u>
Hardwood - (E/I) Plantations (Euc., Populus)	2985
Conifer - (I) Plantations (Abies, Pinus)	1700
Conifer - Mgt. Natural Regeneration	1360
Conifer - Original Forest	1360
TOTAL	7405



PULP FIBER SUPPLY ANALYSIS - 1993

REGION: ASIA

COUNTRY:

INDIA

Pulp Industry 1993

Number of Pulpmills	245
Total Pulp Production (1000 tonnes)	2279
Deinked Pulp Production (1000 tonnes)	(44)
Virgin Fiber Pulp Production (1000 tonnes)	2235
Non-Wood Pulp Production (1000 tonnes)	(1100)
Bamboo - 45%	Hemp
Bagasse - 28%	Cotton
Straw - 22%	Reed
Other - 5%	
Wood-Based Pulp Production (1000 tonnes)	1135
Derived Wood Fiber Demand (1000 ODMT)	2233

Wood Supply Characteristics (Cum/ODMT = 2.2)

Conifer - 0%	Hardwood - 100%
Roundwood - 90%	Residues - 10% (Manf.)
<u>Forest Type</u>	<u>Est. Supply 1993 (1000 cum)</u>
Hardwood - (E) Plantations (Euc. spp.)	4370
Hardwood - Mixed Tropical Hardwoods	475
TOTAL	4845



PULP FIBER SUPPLY ANALYSIS - 1993

REGION: ASIA

COUNTRY: INDONESIA

Pulp Industry 1993

Number of Pulpmills	14
Total Pulp Production (1000 tonnes)	1720
Deinked Pulp Production (1000 tonnes)	(463)
Virgin Fiber Pulp Production (1000 tonnes)	1257
Non-Wood Pulp Production (1000 tonnes)	(141)
Bamboo - 6%	Hemp
Bagasse - 80%	Cotton
Straw - 6%	Reed
Other - 8%	
Wood-Based Pulp Production (1000 tonnes)	1116
Derived Wood Fiber Demand (1000 ODMT)	2260

Wood Supply Characteristics (Cum/ODMT = 2.1)

Conifer - 42%	Hardwood - 58%
Roundwood - 96%	Residues - 4% (Manf.)
<u>Forest Type</u>	<u>Est. Supply 1993 (1000 cum)</u>
Conifer - (I) Plantations (Pinus merkusii)	2000
Hardwood - Mixed Tropical Hardwood	2790
TOTAL	4790



PULP FIBER SUPPLY ANALYSIS - 1993

REGION: ASIA

COUNTRY: IRAN

Pulp Industry 1993

Number of Pulpmills	3
Total Pulp Production (1000 tonnes)	115
Deinked Pulp Production (1000 tonnes)	(16)
Virgin Fiber Pulp Production (1000 tonnes)	99
Non-Wood Pulp Production (1000 tonnes)	(62)
Bamboo	Hemp
Bagasse - 65%	Cotton
Straw - 35%	Reed
Other	
Wood-Based Pulp Production (1000 tonnes)	37
Derived Wood Fiber Demand (1000 ODMT)	80

Wood Supply Characteristics(Cum/ODMT = 2.1)

Conifer - 0%	Hardwood - 100%
Roundwood - 100%	Residues - 0%
<u>Forest Type</u>	<u>Est. Supply 1993 (1000 cum)</u>
Hardwood - Mgt. Natural Regeneration	145
Hardwood - (I) Plantations (Populus spp.)	20
TOTAL	165



PULP FIBER SUPPLY ANALYSIS - 1993

REGION: ASIA

COUNTRY:

IRAQ

Pulp Industry 1993

Number of Pulpmills			2
Total Pulp Production (1000 tonnes)			1
Deinked Pulp Production (1000 tonnes)			(0)
Virgin Fiber Pulp Production (1000 tonnes)			1
Non-Wood Pulp Production (1000 tonnes)			(1)
Bamboo	Hemp		
Bagasse - 27%	Cotton		
Straw	Reed - 73%		
Other			
Wood-Based Pulp Production (1000 tonnes)			0
Derived Wood Fiber Demand (1000 ODMT)			0

Wood Supply Characteristics

Conifer	N/A	Hardwood	N/A
Roundwood	N/A	Residues	N/A

Forest Type

Est. Supply 1993 (1000 cum)

TOTAL



PULP FIBER SUPPLY ANALYSIS - 1993

REGION: ASIA

COUNTRY: JAPAN

Pulp Industry 1993

Number of Pulpmills	55
Total Pulp Production (1000 tonnes)	13628
Deinked Pulp Production (1000 tonnes)	(2257)
Virgin Fiber Pulp Production (1000 tonnes)	11371
Non-Wood Pulp Production (1000 tonnes)	(0)
Bamboo	Hemp
Bagasse	Cotton
Straw	Reed
Other	
Wood-Based Pulp Production (1000 tonnes)	11371
Derived Wood Fiber Demand (1000 ODMT)	17780

Wood Supply Characteristics (Cum/ODMT = 2.0)

Conifer - 44%	Hardwood - 56%
Roundwood - 4%	Residues - 96% (36% Manf. - 64% Roundwood Chips)
<u>Forest Type</u>	<u>Est. Supply 1993</u> (1000 cum)
Conifer - (I/E) Plantations (Cedrus, Cupress, Pinus radiata)	10206
Conifer - Mgt./UnMgt. Natural Regeneration	3520
Conifer - Original Forest	1896
Hardwood - Original Forest	1600
Hardwood - (E) Plantations (Euc., Acacia)	2874
Hardwood - Mgt./UnMgt. Natural Regen.	15050
Hardwood - Mixed Tropical Hardwood	414
TOTAL	35560



1993 WOOD FIBER IMPORT ANALYSIS - JAPAN

(000 CUBIC METERS)

<u>SOURCE</u>	<u>VOLUME</u>	<u>DOMINANT TIMBER TYPE</u>
CONIFER CHIPS		
USA	3812	(I) Plantations
Canada	1066	Original Forest
Australia	939	(E) Plantations
Brazil	259	(E) Plantations
New Zealand	355	(E) Plantations
Fiji	209	(E) Plantations
Russia	251	Original Forest
Chile	203	(E) Plantations
TOTAL	7094	
HARDWOOD CHIPS		
USA	4188	Mgt./UnMgt. Natural Regeneration
Australia	4583	Mgt. Natural Regeneration / Original Forest
Chile	3008	Mgt. Natural Regeneration / Original Forest
South Africa	1168	(E) Plantations
China	661	(E/I) Plantations
Indonesia	414	UnMgt. Natural Regeneration (MTH)
Thailand	200	(E) Plantations
Other	564	Mixed Sources
TOTAL	14786	



PULP FIBER SUPPLY ANALYSIS - 1993

REGION: ASIA

COUNTRY: KOREA, DPR

Pulp Industry 1993

Number of Pulpmills	2
Total Pulp Production (1000 tonnes)	40
Deinked Pulp Production (1000 tonnes)	(0)
Virgin Fiber Pulp Production (1000 tonnes)	40
Non-Wood Pulp Production (1000 tonnes)	(20)
Bamboo	Hemp
Bagasse	Cotton
Straw	Reed
Other - 100%	
Wood-Based Pulp Production (1000 tonnes)	20
Derived Wood Fiber Demand (1000 ODMT)	39

Wood Supply Characteristics (Cum/ODMT = 1.9)

Conifer - 80%e	Hardwood - 20%e
Roundwood - 100%e	Residues - 0%e

<u>Forest Type</u>	<u>Est. Supply 1993 (1000 cum)</u>
Conifer - (I) Plantations (Pinus spp., Larix)	60e
Hardwood - (I) Plantations (Quercus spp.)	15e
TOTAL	75e



PULP FIBER SUPPLY ANALYSIS - 1993

REGION: ASIA

COUNTRY: KOREA, REP. OF

Pulp Industry 1993

Number of Pulpmills	4
Total Pulp Production (1000 tonnes)	1617
Deinked Pulp Production (1000 tonnes)	(1170)
Virgin Fiber Pulp Production (1000 tonnes)	447
Non-Wood Pulp Production (1000 tonnes)	(0)
Bamboo	
Bagasse	
Straw	
Other	
Hemp	
Cotton	
Reed	
Wood-Based Pulp Production (1000 tonnes)	447
Derived Wood Fiber Demand (1000 ODMT)	760

Wood Supply Characteristics (Cum/ODMT = 2.2)

Conifer - 29%

Hardwood - 71%

Roundwood - 27%

Residues - 73% (Roundwood Chips)

Forest Type

Est. Supply 1993 (1000 cum)

Conifer - (I) Plantations (Pinus spp. Larix)	450
Hardwood - (I/E) Plantations (Quercus, Euc.)	180
Hardwood - Mgt./UnMgt. Natural Regen.	975
Hardwood - Mixed Tropical Hardwood	65

TOTAL

1670



1993 WOOD FIBER IMPORT ANALYSIS - S. KOREA

(000 CUBIC METERS)

<u>SOURCE</u>	<u>VOLUME</u>	<u>DOMINANT TIMBER TYPE</u>
HARDWOOD CHIPS		
USA	570	Mgt./UnMgt. Natural Regeneration
Australia	55	Mgt. Natural Regeneration / Original Forest
Chile	42	Mgt. Natural Regeneration / Original Forest
South Africa	30	(E) Plantations
China	296	Mgt. Natural Regeneration / (E) Plantations
Indonesia	63	Mixed Tropical Hardwood
Other	14	Mixed Sources
TOTAL	1070	



PULP FIBER SUPPLY ANALYSIS - 1993

REGION: ASIA

COUNTRY: MALAYSIA

Pulp Industry 1993

Number of Pulpmills	1
Total Pulp Production (1000 tonnes)	138
Deinked Pulp Production (1000 tonnes)	(54)
Virgin Fiber Pulp Production (1000 tonnes)	84
Non-Wood Pulp Production (1000 tonnes)	(0)
Bamboo	Hemp
Bagasse	Cotton
Straw	Reed
Other	
Wood-Based Pulp Production (1000 tonnes)	84
Derived Wood Fiber Demand (1000 ODMT)	183

Wood Supply Characteristics (Cum/ODMT = 2.1)

Conifer - 20%	Hardwood - 80%
Roundwood - 95%	Residues - 5% (Manf.)
<u>Forest Type</u>	<u>Est. Supply 1993 (1000 cum)</u>
Hardwood - Mixed Tropical Hardwood	310
Conifer - (I/E) Plantations (Pinus merkusii, caribaea)	80
TOTAL	390



PULP FIBER SUPPLY ANALYSIS - 1993

REGION: ASIA

COUNTRY: MYANMAR

Pulp Industry 1993

Number of Pulpmills	2
Total Pulp Production (1000 tonnes)	1.6
Deinked Pulp Production (1000 tonnes)	(0)
Virgin Fiber Pulp Production (1000 tonnes)	1.6
Non-Wood Pulp Production (1000 tonnes)	(1.6)
Bamboo - 100%	Hemp
Bagasse	Cotton
Straw	Reed
Other	
Wood-Based Pulp Production (1000 tonnes)	0
Derived Wood Fiber Demand (1000 ODMT)	0

Wood Supply Characteristics

Conifer	N/A	Hardwood	N/A
Roundwood	N/A	Residues	N/A

Forest Type

Est. Supply 1993 (1000 cum)

TOTAL



PULP FIBER SUPPLY ANALYSIS - 1993

REGION: ASIA

COUNTRY:

NEPAL

Pulp Industry 1993

Number of Pulpmills		1
Total Pulp Production (1000 tonnes)		3
Deinked Pulp Production (1000 tonnes)		(0)
Virgin Fiber Pulp Production (1000 tonnes)		3
Non-Wood Pulp Production (1000 tonnes)		(3)
Bamboo	Hemp	
Bagasse	Cotton	
Straw - 65%	Reed	
Other - 35%		
Wood-Based Pulp Production (1000 tonnes)		0
Derived Wood Fiber Demand (1000 ODMT)		0

Wood Supply Characteristics

Conifer	N/A	Hardwood	N/A
Roundwood	N/A	Residues	N/A

Forest Type

Est. Supply 1993 (1000 cum)

TOTAL



PULP FIBER SUPPLY ANALYSIS - 1993

REGION: ASIA

COUNTRY: PAKISTAN

Pulp Industry 1993

Number of Pulpmills	19
Total Pulp Production (1000 tonnes)	151
Deinked Pulp Production (1000 tonnes)	(6)
Virgin Fiber Pulp Production (1000 tonnes)	145
Non-Wood Pulp Production (1000 tonnes)	(145)
Bamboo	Hemp
Bagasse - 13%	Cotton
Straw - 62%	Reed
Other - 25%	
Wood-Based Pulp Production (1000 tonnes)	0
Derived Wood Fiber Demand (1000 ODMT)	0

Wood Supply Characteristics

Conifer	N/A	Hardwood	N/A
Roundwood	N/A	Residues	N/A
<u>Forest Type</u>		<u>Est. Supply 1993</u>	(1000 cum)

TOTAL



PULP FIBER SUPPLY ANALYSIS - 1993

REGION: ASIA

COUNTRY: PHILIPPINES

Pulp Industry 1993

Number of Pulpmills	5
Total Pulp Production (1000 tonnes)	110
Deinked Pulp Production (1000 tonnes)	(30)
Virgin Fiber Pulp Production (1000 tonnes)	80
Non-Wood Pulp Production (1000 tonnes)	(15)
Bamboo	Hemp - 69%
Bagasse - 31%	Cotton
Straw	Reed
Other	
Wood-Based Pulp Production (1000 tonnes)	65
Derived Wood Fiber Demand (1000 ODMT)	142

Wood Supply Characteristics (Cum/ODMT = 2.2)

Conifer - 29%	Hardwood - 71%
Roundwood - 100%	Residues - 0%
<u>Forest Type</u>	<u>Est. Supply 1993 (1000 cum)</u>
Conifer - (E) Plantations (Pinus caribaea)	75
Conifer - UnMgt. Natural Regen.	20
Hardwood - (I/E) Plantations (Euc. spp)	90
Hardwood - Mixed Tropical Hardwood	130
TOTAL	315



PULP FIBER SUPPLY ANALYSIS - 1993

REGION: ASIA

COUNTRY: SRI LANKA

Pulp Industry 1993

Number of Pulpmills	1
Total Pulp Production (1000 tonnes)	17
Deinked Pulp Production (1000 tonnes)	(6)
Virgin Fiber Pulp Production (1000 tonnes)	11
Non-Wood Pulp Production (1000 tonnes)	(8)
Bamboo	Hemp
Bagasse	Cotton
Straw - 100%	Reed
Other	
Wood-Based Pulp Production (1000 tonnes)	3
Derived Wood Fiber Demand (1000 ODMT)	7

Wood Supply Characteristics (Cum/ODMT = 2.6)

Conifer - 0%	Hardwood - 100%
Roundwood - 100%	Residues - 0%
<u>Forest Type</u>	<u>Est. Supply 1993 (1000 cum)</u>
Hardwood - (E/I) Plantations (Euc., Albizia)	18
TOTAL	18



PULP FIBER SUPPLY ANALYSIS - 1993

REGION: ASIA

COUNTRY: TAIWAN

Pulp Industry 1993

Number of Pulpmills	3
Total Pulp Production (1000 tonnes)	315
Deinked Pulp Production (1000 tonnes)	(0)
Virgin Fiber Pulp Production (1000 tonnes)	315
Non-Wood Pulp Production (1000 tonnes)	(31)
Bamboo	Hemp
Bagasse - 100%	Cotton
Straw	Reed
Other	
Wood-Based Pulp Production (1000 tonnes)	284
Derived Wood Fiber Demand (1000 ODMT)	617

Wood Supply Characteristics (Cum/ODMT - 2.2)

Conifer - 10%

Hardwood - 90%

Roundwood - 10%

Residues - 90% (Roundwood Chips)

Forest Type

Est. Supply 1993 (1000 cum)

Conifer - Mgt. Natural Regen.	200
Hardwood - Mixed Tropical Hardwood	510
Hardwood - (E) Plantations (Euc. spp.)	270
Hardwood - Mgt. Natural Regen.	300
Hardwood - UnMgt. Natural Regen.	75
TOTAL	1355



1993 WOOD FIBER IMPORT ANALYSIS - TAIWAN

(000 CUBIC METERS)

<u>SOURCE</u>	<u>VOLUME</u>	<u>DOMINANT TIMBER TYPE</u>
HARDWOOD CHIPS		
USA	160	Mgt./UnMgt. Natural Regeneration
Australia	194	Mgt. Natural Regeneration / Original Forest
China	130	Mgt. Natural Regeneration / (E) Plantations
Indonesia	600	Mixed Tropical Hardwood
Vietnam	115	(E) Plantations
Russia	66	Mgt./UnMgt. Natural Regeneration
Other	130	(E) Plantations
TOTAL	1395	



PULP FIBER SUPPLY ANALYSIS - 1993

REGION: ASIA

COUNTRY: THAILAND

Pulp Industry 1993

Number of Pulpmills	5
Total Pulp Production (1000 tonnes)	390
Deinked Pulp Production (1000 tonnes)	(70)
Virgin Fiber Pulp Production (1000 tonnes)	320
Non-Wood Pulp Production (1000 tonnes)	(140)
Bamboo - 58%	Hemp
Bagasse - 32%	Cotton
Straw - 5%	Reed
Other - 5%	
Wood-Based Pulp Production (1000 tonnes)	180
Derived Wood Fiber Demand (1000 ODMT)	390

Wood Supply Characteristics (Cum/ODMT = 2.2)

Conifer - 0%	Hardwood - 100%
Roundwood - 100%	Residues - 0%
<u>Forest Type</u>	<u>Est. Supply 1993 (1000 cum)</u>
Hardwood - (E) Plantations (Euc. camaldulensis)	870
TOTAL	870



PULP FIBER SUPPLY ANALYSIS - 1993

REGION: ASIA

COUNTRY: TURKEY

Pulp Industry 1993

Number of Pulpmills	10
Total Pulp Production (1000 tonnes)	371
Deinked Pulp Production (1000 tonnes)	(30)
Virgin Fiber Pulp Production (1000 tonnes)	341
Non-Wood Pulp Production (1000 tonnes)	(64)
Bamboo	Hemp - 15%
Bagasse	Cotton - 5%
Straw - 75%	Reed - 5%
Other	
Wood-Based Pulp Production (1000 tonnes)	277
Derived Wood Fiber Demand (1000 ODMT)	525

Wood Supply Characteristics (Cum/ODMT = 2.5)

Conifer - 90%	Hardwood - 10%
Roundwood - 80%	Residues - 20% (Manf.)

<u>Forest Type</u>	<u>Est. Supply 1993 (1000 cum)</u>
Conifer - (I) Plantations (Pinus spp.)	300
Conifer - Mgt. Natural Regen.	900
Hardwood - (E) Plantations (Acacia, Euc., Populus)	110
TOTAL	1310



PULP FIBER SUPPLY ANALYSIS - 1993

REGION: ASIA

COUNTRY: VIETNAM

Pulp Industry 1993

Number of Pulpmills	1
Total Pulp Production (1000 tonnes)	45
Deinked Pulp Production (1000 tonnes)	(0)
Virgin Fiber Pulp Production (1000 tonnes)	45
Non-Wood Pulp Production (1000 tonnes)	(25)
Bamboo - 100%	Hemp
Bagasse	Cotton
Straw	Reed
Other	
Wood-Based Pulp Production (1000 tonnes)	20
Derived Wood Fiber Demand (1000 ODMT)	32

Wood Supply Characteristics (Cum/ODMT = 2.3)

Conifer - 27%	Hardwood - 73%
Roundwood - 100%	Residues - 0%
<u>Forest Type</u>	<u>Est. Supply 1993 (1000 cum)</u>
Hardwood - (E) Plantations (Euc. spp.)	55
Conifer - (E) Plantations (Pinus merkusii)	20
TOTAL	75



PULP FIBER SUPPLY ANALYSIS - 1993

REGION: NORTH AMERICA

COUNTRY: CANADA

Pulp Industry 1993

Number of Pulpmills	27
Total Pulp Production (1000 tonnes)	24650
Deinked Pulp Production (1000 tonnes)	(1470)
Virgin Fiber Pulp Production (1000 tonnes)	23180
Non-Wood Pulp Production (1000 tonnes)	(0)
Bamboo	Hemp
Bagasse	Cotton
Straw	Reed
Other	
Wood-Based Pulp Production (1000 tonnes)	23180
Derived Wood Fiber Demand (1000 ODMT)	38093

Wood Supply Characteristics (Cum/ODMT = 2.6)

Conifer - 87%	Hardwood - 13%
Roundwood - 36%	Residues - 64% (90% Manf. - 10% Roundwood Chips)

<u>Forest Type</u>	<u>Est. Supply 1993 (1000 cum)</u>
Conifer - Original Forest	64796
Conifer - (I) Plantations (Picea, Abies, Pinus, Pseudotsuga M.)	8315
Conifer - Mgt. Natural Regeneration	12887
Conifer - UnMgt. Natural Regeneration	1874
Hardwood - Original Forest	6332
Hardwood - Mgt. Natural Regeneration	6152
Hardwood - UnMgt. Natural Regeneration	564
TOTAL	100920



1993 WOOD FIBER SOURCE ESTIMATES FOR CANADA

(000 CUBIC METERS)

Western Canada - British Columbia, Alberta
Eastern Canada - Ontario, Quebec
Maritimes - Nova Scotia, New Brunswick
Rest of Canada

	<u>W. CAN.</u>	<u>E. CAN.</u>	<u>MAR.</u>	<u>ROC</u>	<u>TOTAL</u>
<u>Forest Type</u>					
Con. Original Forest	33888	27130	---	3778	64796
Con. Plantation	3987	3391	937	---	8315
Con. Mgt. Nat. Regen.	1993	3391	6558	945	12887
Con. UnMgt. Nat. Regen.	---	---	1874	---	1874
Hdwd. Original Forest	1708	3980	---	644	6332
Hdwd. Mgt. Nat. Regen.	427	3980	1316	429	6152
Hdwd. UnMgt. Nat. Regen.	---	---	564	---	564



PULP FIBER SUPPLY ANALYSIS - 1993

REGION: NORTH AMERICA

COUNTRY: MEXICO

Pulp Industry 1993

Number of Pulpmills	11
Total Pulp Production (1000 tonnes)	528
Deinked Pulp Production (1000 tonnes)	(185)
Virgin Fiber Pulp Production (1000 tonnes)	343
Non-Wood Pulp Production (1000 tonnes)	(240)
Bamboo	Hemp
Bagasse - 95%	Cotton - 2%
Straw - 3%	Reed
Other	
Wood-Based Pulp Production (1000 tonnes)	103
Derived Wood Fiber Demand (1000 ODMT)	224

Wood Supply Characteristics (Cum/ODMT = 2.4)

Conifer - 86%	Hardwood - 14%
Roundwood - 90%	Residues - 10% (Manf.)
Forest Type	Est. Supply 1993 (1000 cum)
Conifer - Mgt./Unmgt. Natural Regeneration	460
Conifer - (I/E) Plantations (Pinus spp.)	20
Hardwood - Mixed Tropical Hardwood	65
TOTAL	545



1993 WOOD FIBER SOURCE ESTIMATES FOR THE U.S.

(000 CUBIC METERS)

U.S. SOUTH - 10 Southeastern states (Virginia to Texas)
 U.S. PNW - Washington, Oregon, California, Montana, Idaho
 U.S. Lake States - Minnesota, Wisconsin, Michigan
 U.S. Northeast - Maine, Vermont, New Hampshire, New York, Pennsylvania
 Rest of U.S.

	<u>USS</u>	<u>USPNW</u>	<u>USLS</u>	<u>USNE</u>	<u>ROUS</u>	<u>TOTAL</u>
<u>Forest Type</u>						
Con. Original Forest	---	2685	---	---	---	2685
Con. Plantation	31537	18793	1604	989	5740	58663
Con. Mgt. Nat. Regen.	42049	5369	2673	6430	3444	59965
Con. UnMgt. Nat. Regen.	31536	---	1068	2473	2296	37373
Hdwd. Mgt. Nat. Regen.	23652	2195	4998	4693	1424	36962
Hdwd. UnMgt. Nat. Regen.	35478	549	4998	3129	4273	48427



PULP FIBER SUPPLY ANALYSIS - 1993

REGION: SOUTH AMERICA

COUNTRY: ARGENTINA

Pulp Industry 1993

Number of Pulpmills	13
Total Pulp Production (1000 tonnes)	729
Deinked Pulp Production (1000 tonnes)	(26)
Virgin Fiber Pulp Production (1000 tonnes)	703
Non-Wood Pulp Production (1000 tonnes)	(112)
Bamboo	Hemp
Bagasse - 100%	Cotton
Straw	Reed
Other	
Wood-Based Pulp Production (1000 tonnes)	591
Derived Wood Fiber Demand (1000 ODMT)	1122

Wood Supply Characteristics (Cum/ODMT = 2.2)

Conifer - 57%	Hardwood - 43%
Roundwood - 96%	Residues - 4% (Manf.)
<u>Forest Type</u>	<u>Est. Supply 1993 (1000 cum)</u>
Conifer - (E/I) Plantations (Pinus spp.)	1280
Hardwood - (E) Plantations (Euc., Populus, Salix)	1095
Hardwood - Original Forest	95
TOTAL	2470



PULP FIBER SUPPLY ANALYSIS - 1993

REGION: SOUTH AMERICA **COUNTRY:** BRAZIL

Pulp Industry 1993

Number of Pulpmills	35
Total Pulp Production (1000 tonnes)	5655
Deinked Pulp Production (1000 tonnes)	(121)
Virgin Fiber Pulp Production (1000 tonnes)	5534
Non-Wood Pulp Production (1000 tonnes)	(120)
Bamboo - 34%	Hemp
Bagasse - 48%	Cotton
Straw	Reed
Other - 17%	
Wood-Based Pulp Production (1000 tonnes)	5414
Derived Wood Fiber Demand (1000 ODMT)	10958

Wood Supply Characteristics (Cum/ODMT = 2.1)

Conifer - 28%	Hardwood - 72%
Roundwood - 98%	Residues - 2% (Manf.)
<u>Forest Type</u>	<u>Est. Supply 1993 (1000 cum)</u>
Conifer - (I/E) Plantations (Pinus, Araucaria)	6260
Hardwood - (E) Plantations (Euc., Gmelina, Acacia)	16200
Hardwood - Mixed Tropical Hardwood	930
TOTAL	23390



PULP FIBER SUPPLY ANALYSIS - 1993

REGION: SOUTH AMERICA **COUNTRY:** CHILE

Pulp Industry 1993

Number of Pulpmills	9								
Total Pulp Production (1000 tonnes)	1940								
Deinked Pulp Production (1000 tonnes)	(98)								
Virgin Fiber Pulp Production (1000 tonnes)	1842								
Non-Wood Pulp Production (1000 tonnes)	(0)								
<table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%;">Bamboo</td> <td style="width: 50%;">Hemp</td> </tr> <tr> <td>Bagasse</td> <td>Cotton</td> </tr> <tr> <td>Straw</td> <td>Reed</td> </tr> <tr> <td>Other</td> <td></td> </tr> </table>	Bamboo	Hemp	Bagasse	Cotton	Straw	Reed	Other		
Bamboo	Hemp								
Bagasse	Cotton								
Straw	Reed								
Other									
Wood-Based Pulp Production (1000 tonnes)	1842								
Derived Wood Fiber Demand (1000 ODMT)	3803								

Wood Supply Characteristics (Cum/ODMT = 2.3)

Conifer - 92%	Hardwood - 8%
Roundwood - 77%	Residues - 23% (Manf.)
<u>Forest Type</u>	<u>Est. Supply 1993</u> (1000 cum)
Conifer - (E) Plantations (Pinus Radiata)	8140
Hardwood - (E) Plantations (Euc.)	510
TOTAL	8650



PULP FIBER SUPPLY ANALYSIS - 1993

REGION: SOUTH AMERICA

COUNTRY: COLOMBIA

Pulp Industry 1993

Number of Pulpmills	10
Total Pulp Production (1000 tonnes)	370
Deinked Pulp Production (1000 tonnes)	(49)
Virgin Fiber Pulp Production (1000 tonnes)	321
Non-Wood Pulp Production (1000 tonnes)	(131)
Bamboo	Hemp - 5%
Bagasse - 95%	Cotton
Straw	Reed
Other	
Wood-Based Pulp Production (1000 tonnes)	190
Derived Wood Fiber Demand (1000 ODMT)	360

Wood Supply Characteristics (Cum/ODMT = 2.1)

Conifer - 33%	Hardwood - 66%
Roundwood - 100%	Residues - 0%
<u>Forest Type</u>	<u>Est. Supply 1993 (1000 cum)</u>
Conifer - (E) Plantations (Pinus spp.)	275
Hardwood - (E) Plantations (Euc.)	480
TOTAL	755



PULP FIBER SUPPLY ANALYSIS - 1993

REGION: SOUTH AMERICA

COUNTRY: ECUADOR

Pulp Industry 1993

Number of Pulpmills	1
Total Pulp Production (1000 tonnes)	46
Deinked Pulp Production (1000 tonnes)	(19)
Virgin Fiber Pulp Production (1000 tonnes)	27
Non-Wood Pulp Production (1000 tonnes)	(27)
Bamboo	Hemp
Bagasse - 100%	Cotton
Straw	Reed
Other	
Wood-Based Pulp Production (1000 tonnes)	0
Derived Wood Fiber Demand (1000 ODMT)	0

Wood Supply Characteristics

Conifer	N/A	Hardwood	N/A
Roundwood	N/A	Residues	N/A

Forest Type

Est. Supply 1993 (1000 cum)

TOTAL



PULP FIBER SUPPLY ANALYSIS - 1993

REGION: SOUTH AMERICA **COUNTRY:** PERU

Pulp Industry 1993

Number of Pulpmills	4
Total Pulp Production (1000 tonnes)	80
<u>Deinked Pulp Production</u> (1000 tonnes)	(34)
Virgin Fiber Pulp Production (1000 tonnes)	46
Non-Wood Pulp Production (1000 tonnes)	(46)
Bamboo	Hemp
Bagasse - 100%	Cotton
Straw	Reed
Other	
Wood-Based Pulp Production (1000 tonnes)	0
Derived Wood Fiber Demand (1000 ODMT)	0

Wood Supply Characteristics

Conifer	N/A	Hardwood	N/A
Roundwood	N/A	Residues	N/A
<u>Forest Type</u>		<u>Est. Supply 1993</u> (1000 cum)	

TOTAL



PULP FIBER SUPPLY ANALYSIS - 1993

REGION: SOUTH AMERICA

COUNTRY: URUGUAY

Pulp Industry 1993

Number of Pulpmills	2
Total Pulp Production (1000 tonnes)	26
Deinked Pulp Production (1000 tonnes)	(0)
Virgin Fiber Pulp Production (1000 tonnes)	26
Non-Wood Pulp Production (1000 tonnes)	(0)
Bamboo	Hemp
Bagasse	Cotton
Straw	Reed
Other	
Wood-Based Pulp Production (1000 tonnes)	26
Derived Wood Fiber Demand (1000 ODMT)	53

Wood Supply Characteristics (Cum/ODMT = 2.2)

Conifer - 10%	Hardwood - 90%
Roundwood - 100%	Residues - 0%
<u>Forest Type</u>	<u>Est. Supply 1993 (1000 cum)</u>
Hardwood - (E) Plantations (Euc., Populus, Alnus)	105
Conifer - (E) Plantations (Pinus spp.)	10
TOTAL	115



PULP FIBER SUPPLY ANALYSIS - 1993

REGION: SOUTH AMERICA

COUNTRY: VENEZUELA

Pulp Industry 1993

Number of Pulpmills	4
Total Pulp Production (1000 tonnes)	232
Deinked Pulp Production (1000 tonnes)	(131)
Virgin Fiber Pulp Production (1000 tonnes)	101
Non-Wood Pulp Production (1000 tonnes)	(92)
Bamboo	Hemp
Bagasse - 100%	Cotton
Straw	Reed
Other	
Wood-Based Pulp Production (1000 tonnes)	9
Derived Wood Fiber Demand (1000 ODMT)	10

Wood Supply Characteristics (Cum/ODMT = 2.3)

Conifer - 100%	Hardwood - 0%
Roundwood - 97%	Residues - 3% (Manf.)
<u>Forest Type</u>	<u>Est. Supply 1993 (1000 cum)</u>
Conifer - (E) Plantations (Pinus caribaea)	25
TOTAL	25



PULP FIBER SUPPLY ANALYSIS - 1993

REGION: CENTRAL AMERICA

COUNTRY: COSTA RICA

Pulp Industry 1993

Number of Pulpmills	1
Total Pulp Production (1000 tonnes)	23
Deinked Pulp Production (1000 tonnes)	(7)
Virgin Fiber Pulp Production (1000 tonnes)	16
Non-Wood Pulp Production (1000 tonnes)	(0)
Bamboo	Hemp
Bagasse	Cotton
Straw	Reed
Other	
Wood-Based Pulp Production (1000 tonnes)	16
Derived Wood Fiber Demand (1000 ODMT)	17

Wood Supply Characteristics (Cum/ODMT = 2.9)

Conifer - 0%	Hardwood - 100%
Roundwood - 100%	Residues - 0%
<u>Forest Type</u>	<u>Est. Supply 1993 (1000 cum)</u>
Hardwood - (E) Plantations (Gmelina arborea)	50
TOTAL	50



PULP FIBER SUPPLY ANALYSIS - 1993

REGION: CENTRAL AMERICA

COUNTRY:

CUBA

Pulp Industry 1993

Number of Pulpmills		3
Total Pulp Production (1000 tonnes)		20
Deinked Pulp Production (1000 tonnes)		(0)
Virgin Fiber Pulp Production (1000 tonnes)		20
Non-Wood Pulp Production (1000 tonnes)		(20)
Bamboo	Hemp	
Bagasse - 100%	Cotton	
Straw	Reed	
Other		
Wood-Based Pulp Production (1000 tonnes)		0
Derived Wood Fiber Demand (1000 ODMT)		0

Wood Supply Characteristics

Conifer	N/A	Hardwood	N/A
Roundwood	N/A	Residues	N/A

Forest Type

Est. Supply 1993 (1000 cum)

TOTAL



PULP FIBER SUPPLY ANALYSIS - 1993

REGION: OCEANIA

COUNTRY: AUSTRALIA

Pulp Industry 1993

Number of Pulpmills	11
Total Pulp Production (1000 tonnes)	1210
Deinked Pulp Production (1000 tonnes)	(195)
Virgin Fiber Pulp Production (1000 tonnes)	1015
Non-Wood Pulp Production (1000 tonnes)	(0)
Bamboo	Hemp
Bagasse	Cotton
Straw	Reed
Other	
Wood-Based Pulp Production (1000 tonnes)	1015
Derived Wood Fiber Demand (1000 ODMT)	1388

Wood Supply Characteristics (Cum/ODMT = 2.2)

Conifer - 69%

Hardwood - 31%

Roundwood - 90%

Residues - 10% (Manf.)

Forest Type

Est. Supply 1993 (1000 cum)

Conifer - (E) Plantations (Pinus radiata, caribaea)	2225
Hardwood - Mgt. Natural Regeneration	640
Hardwood - Original Forest	225
TOTAL	3090



PULP FIBER SUPPLY ANALYSIS - 1993

REGION: OCEANIA

COUNTRY: NEW ZEALAND

Pulp Industry 1993

Number of Pulpmills	6
Total Pulp Production (1000 tonnes)	1370
Deinked Pulp Production (1000 tonnes)	(19)
Virgin Fiber Pulp Production (1000 tonnes)	1351
Non-Wood Pulp Production (1000 tonnes)	(0)
Bamboo	Hemp
Bagasse	Cotton
Straw	Reed
Other	
Wood-Based Pulp Production (1000 tonnes)	1351
Derived Wood Fiber Demand (1000 ODMT)	2135

Wood Supply Characteristics (Cum/ODMT = 2.3)

Conifer - 96%	Hardwood - 4%
Roundwood - 75%	Residues - 25% (Manf.)
<u>Forest Type</u>	<u>Est. Supply 1993 (1000 cum)</u>
Conifer - (E) Plantations (Pinus radiata, contorta, Pseudotsuga Men.)	4770
Hardwood - (E) Plantations (Euc. spp.)	185
TOTAL	4955



PULP FIBER SUPPLY ANALYSIS - 1993

REGION: W. EUROPE

COUNTRY: AUSTRIA

Pulp Industry 1993

Number of Pulpmills	11
Total Pulp Production (1000 tonnes)	1974
Deinked Pulp Production (1000 tonnes)	(437)
Virgin Fiber Pulp Production (1000 tonnes)	1537
Non-Wood Pulp Production (1000 tonnes)	(1)
Bamboo	Hemp
Bagasse	Cotton - 100%
Straw	Reed
Other	
Wood-Based Pulp Production (1000 tonnes)	1536
Derived Wood Fiber Demand (1000 ODMT)	2564

Wood Supply Characteristics (Cum/ODMT = 2.6)

Conifer - 83%

Hardwood - 17%

Roundwood - 59%

Residues - 41% (Manf.)

Forest Type

Est. Supply 1993 (1000 cum)

Conifer - Mgt. Natural Regeneration	4665
Conifer - (I) Plantations (Abies, Pinus)	1165
Hardwood - Mgt. Natural Regeneration	800
TOTAL	6630



PULP FIBER SUPPLY ANALYSIS - 1993

REGION: W. EUROPE

COUNTRY: BELGIUM

Pulp Industry 1993

Number of Pulpmills	3
Total Pulp Production (1000 tonnes)	421
Deinked Pulp Production (1000 tonnes)	(114)
Virgin Fiber Pulp Production (1000 tonnes)	307
Non-Wood Pulp Production (1000 tonnes)	(0)
Bamboo	Hemp
Bagasse	Cotton
Straw	Reed
Other	
Wood-Based Pulp Production (1000 tonnes)	307
Derived Wood Fiber Demand (1000 ODMT)	440

Wood Supply Characteristics (Cum/ODMt = 2.3)

Conifer - 48%	Hardwood - 52%
Roundwood - 62%	Residues - 38% (Manf.)
<u>Forest Type</u>	<u>Est. Supply 1993 (1000 cum)</u>
Conifer - (I) Plantations (Picea, Abies)	555
Hardwood - Mgt. Natural Regeneration	450
TOTAL	1005



PULP FIBER SUPPLY ANALYSIS - 1993

REGION: W. EUROPE

COUNTRY: DENMARK

Pulp Industry 1993

Number of Pulpmills	2
Total Pulp Production (1000 tonnes)	100
Deinked Pulp Production (1000 tonnes)	(45)
Virgin Fiber Pulp Production (1000 tonnes)	55
Non-Wood Pulp Production (1000 tonnes)	(15)
Bamboo	Hemp
Bagasse	Cotton
Straw - 100%	Reed
Other	
Wood-Based Pulp Production (1000 tonnes)	40
Derived Wood Fiber Demand (1000 ODMT)	51

Wood Supply Characteristics (Cum/ODMT = 2.6)

Conifer - 72%	Hardwood - 28%
Roundwood - 21%	Residues - 79% (Manf.)
<u>Forest Type</u>	<u>Est. Supply 1993 (1000 cum)</u>
Conifer - (I/E) Plantations (Pinus, Picea)	95
Hardwood - Mgt. Natural Regeneration	40
TOTAL	135



PULP FIBER SUPPLY ANALYSIS - 1993

REGION: W. EUROPE

COUNTRY: FINLAND

Pulp Industry 1993

Number of Pulpmills	43
Total Pulp Production (1000 tonnes)	9628
Deinked Pulp Production (1000 tonnes)	(290)
Virgin Fiber Pulp Production (1000 tonnes)	9338
Non-Wood Pulp Production (1000 tonnes)	(0)
Bamboo	Hemp
Bagasse	Cotton
Straw	Reed
Other	
Wood-Based Pulp Production (1000 tonnes)	9338
Derived Wood Fiber Demand (1000 ODMT)	16105

Wood Supply Characteristics (Cum/ODMT = 2.4)

Conifer - 74%

Hardwood - 26%

Roundwood - 81%

Residues - 19% (Manf.)

Forest Type

Est. Supply 1993 (1000 cum)

Conifer - Mgt. Natural Regeneration	23245
Conifer - Original Forest	1200
Conifer - (I) Plantations (Picea, Pinus)	6110
Hardwood - Mgt. Natural Regeneration	3810
Hardwood - UnMgt. Natural Regeneration	4400
TOTAL	38765



1993 WOOD FIBER IMPORT ANALYSIS - FINLAND

(000 CUBIC METERS)

<u>SOURCE</u>	<u>VOLUME</u>	<u>DOMINANT TIMBER TYPE</u>
CONIFER RDWD.		
Russia	490	Original Forest
Belarus	180	UnMgt. Natural Regeneration
Latvia	150	Mgt. Natural Regeneration
Other	340	UnMgt. Natural Regeneration
TOTAL	1160	
HARDWOOD RDWD.		
Russia	4300	UnMgt. Natural Regeneration
Estonia	150	Mgt. Natural Regeneration
Latvia	120	Mgt. Natural Regeneration
Other	100	UnMgt. Natural Regeneration
TOTAL	4670	
CONIFER CHIPS		
Russia	510	Original Forest
Germany	30	Mgt. Natural Regeneration
TOTAL	540	



PULP FIBER SUPPLY ANALYSIS - 1993

REGION: W. EUROPE

COUNTRY: GERMANY

Pulp Industry 1993

Number of Pulpmills	22
Total Pulp Production (1000 tonnes)	4937
Deinked Pulp Production (1000 tonnes)	(2463)
Virgin Fiber Pulp Production (1000 tonnes)	2474
Non-Wood Pulp Production (1000 tonnes)	(0)
Bamboo	Hemp
Bagasse	Cotton
Straw	Reed
Other	
Wood-Based Pulp Production (1000 tonnes)	2474
Derived Wood Fiber Demand (1000 ODMT)	3587

Wood Supply Characteristics (Cum/ODMT = 2.4)

Conifer - 88%	Hardwood - 12%
Roundwood - 57%	Residues - 43% (Manf.)
<u>Forest Type</u>	<u>Est. Supply 1993 (1000 cum)</u>
Conifer - (I/E) Plantations (Picea, Abies, Pinus)	7890
Hardwood - Mgt. Natural Regeneration	780
TOTAL	8670



PULP FIBER SUPPLY ANALYSIS - 1993

REGION: W. EUROPE

COUNTRY: GREECE

Pulp Industry 1993

Number of Pulpmills	2
Total Pulp Production (1000 tonnes)	49
Deinked Pulp Production (1000 tonnes)	(7)
Virgin Fiber Pulp Production (1000 tonnes)	42
Non-Wood Pulp Production (1000 tonnes)	(2)
Bamboo	
Bagasse	
Straw - 100%	
Other	
Hemp	
Cotton	
Reed	
Wood-Based Pulp Production (1000 tonnes)	40
Derived Wood Fiber Demand (1000 ODMT)	42

Wood Supply Characteristics (Cum/ODMT = 2.5)

Conifer - 54%	Hardwood - 46%
Roundwood - 100%	Residues - 0%
Forest Type	Est. Supply 1993 (1000 cum)
Conifer - Mgt. Natural Regeneration	55
Hardwood - (I) Plantations (Populus)	50
TOTAL	105



PULP FIBER SUPPLY ANALYSIS - 1993

REGION: W. EUROPE

COUNTRY:

ITALY

Pulp Industry 1993

Number of Pulpmills	19
Total Pulp Production (1000 tonnes)	689
Deinked Pulp Production (1000 tonnes)	(220)
Virgin Fiber Pulp Production (1000 tonnes)	469
Non-Wood Pulp Production (1000 tonnes)	(80)
Bamboo	Hemp
Bagasse	Cotton
Straw - 90%	Reed
Other - 10%	
Wood-Based Pulp Production (1000 tonnes)	389
Derived Wood Fiber Demand (1000 ODMT)	479

Wood Supply Characteristics (Cum/ODMT - 2.3)

Conifer - 72%	Hardwood - 28%
Roundwood - 79%	Residues - 21% (Manf.)
<u>Forest Type</u>	<u>Est. Supply 1993</u> (1000 cum)
Conifer - (I) Plantations (Pinus, Abies)	220
Conifer - Mgt. Natural Regeneration	580
Hardwood - (I/E) Plantations (Populus, Euc.)	300
TOTAL	1100



PULP FIBER SUPPLY ANALYSIS - 1993

REGION: W. EUROPE

COUNTRY: NETHERLANDS

Pulp Industry 1993

Number of Pulpmills	2
Total Pulp Production (1000 tonnes)	539
Deinked Pulp Production (1000 tonnes)	(480)
Virgin Fiber Pulp Production (1000 tonnes)	59
Non-Wood Pulp Production (1000 tonnes)	(3)
Bamboo	Hemp
Bagasse	Cotton
Straw - 100%	Reed
Other	
Wood-Based Pulp Production (1000 tonnes)	56
Derived Wood Fiber Demand (1000 ODMT)	61

Wood Supply Characteristics (Cum/ODMT = 2.6)

Conifer - 80%	Hardwood - 20%
Roundwood - 58%	Residues - 42% (Manf.)
<u>Forest Type</u>	<u>Est. Supply 1993 (1000 cum)</u>
Conifer - (T) Plantations (Pinus sylvestris)	130
Hardwood - Mgt. Natural Regeneration	30
TOTAL	160



PULP FIBER SUPPLY ANALYSIS - 1993

REGION: W. EUROPE

COUNTRY: NORWAY

Pulp Industry 1993

Number of Pulpmills	19
Total Pulp Production (1000 tonnes)	2202
Deinked Pulp Production (1000 tonnes)	(71)
Virgin Fiber Pulp Production (1000 tonnes)	2131
Non-Wood Pulp Production (1000 tonnes)	(0)
Bamboo	Hemp
Bagasse	Cotton
Straw	Reed
Other	
Wood-Based Pulp Production (1000 tonnes)	2131
Derived Wood Fiber Demand (1000 ODMT)	3022

Wood Supply Characteristics (Cum/ODMT = 2.4)

Conifer - 90%	Hardwood - 10%
Roundwood - 77%	Residues - 23% (Manf.)
<u>Forest Type</u>	<u>Est. Supply 1993</u> (1000 cum)
Conifer - Mgt. Natural Regeneration	6600
Hardwood - (E) Plantations (Euc. spp.)	60
Hardwood - Mgt. Natural Regeneration	720
TOTAL	7380



PULP FIBER SUPPLY ANALYSIS - 1993

REGION: W. EUROPE

COUNTRY: PORTUGAL

Pulp Industry 1993

Number of Pulpmills	8
Total Pulp Production (1000 tonnes)	1553
Deinked Pulp Production (1000 tonnes)	(52)
Virgin Fiber Pulp Production (1000 tonnes)	1501
Non-Wood Pulp Production (1000 tonnes)	(13)
Bamboo	Hemp
Bagasse	Cotton
Straw - 100%	Reed
Other	
Wood-Based Pulp Production (1000 tonnes)	1488
Derived Wood Fiber Demand (1000 ODMT)	3229

Wood Supply Characteristics (Cum/ODMT = 1.8)

Conifer - 30%	Hardwood - 70%
Roundwood - 89%	Residues - 11%
<u>Forest Type</u>	<u>Est. Supply 1993 (1000 cum)</u>
Hardwood - (E) Plantations (Euc. spp.)	3700
Conifer - (I) Plantations (Pinus)	215
Conifer - Mgt. Natural Regeneration	1935
TOTAL	5850



1993 WOOD FIBER IMPORT ANALYSIS - SWEDEN

(000 CUBIC METERS)

<u>SOURCE</u>	<u>VOLUME</u>	<u>DOMINANT TIMBER TYPE</u>
CONIFER RDWD.		
Germany	500	Mgt. Natural Regeneration
Norway	460	(I) Plantations / Mgt. Natural Regeneration
Latvia	200	Mgt. Natural Regeneration
Finland	200	Mgt. Natural Regeneration
Estonia	160	Mgt. Natural Regeneration
Poland	140	(I) Plantations
Other	340	UnMgt. Natural Regeneration
TOTAL	2000	
HARDWOOD RDWD.		
Russia	880	UnMgt. Natural Regeneration
Estonia	255	Mgt. Natural Regeneration
Latvia	255	Mgt. Natural Regeneration
Lithuania	115	Mgt. Natural Regeneration
Germany	100	Mgt. Natural Regeneration
Other	55	UnMgt. Natural Regeneration
TOTAL	1660	
CONIFER CHIPS		
Finland	130	Mgt. Natural Regeneration
Germany	90	Mgt. Natural Regeneration
Norway	70	Mgt. Natural Regeneration
Other	110	Mgt./UnMgt. Natural Regeneration
TOTAL	400	
HARDWOOD CHIPS		
Finland	30	Mgt. Natural Regeneration
Other	50	Mgt. Natural Regeneration
TOTAL	80	



PULP FIBER SUPPLY ANALYSIS - 1993

REGION: W. EUROPE

COUNTRY: SWITZERLAND

Pulp Industry 1993

Number of Pulpmills	3
Total Pulp Production (1000 tonnes)	505
Deinked Pulp Production (1000 tonnes)	(211)
Virgin Fiber Pulp Production (1000 tonnes)	294
Non-Wood Pulp Production (1000 tonnes)	(0)
Bamboo	Hemp
Bagasse	Cotton
Straw	Reed
Other	
Wood-Based Pulp Production (1000 tonnes)	294
Derived Wood Fiber Demand (1000 ODMT)	473

Wood Supply Characteristics (Cum/ODMT = 2.4)

Conifer - 77%	Hardwood - 23%
Roundwood - 37%	Residues - 63% (Manf.)
<u>Forest Type</u>	<u>Est. Supply 1993 (1000 cum)</u>
Conifer - (I) Plantations (Picea, Abies)	700
Conifer - Mgt. Natural Regeneration	250
Hardwood - Mgt. Natural Regeneration	200
TOTAL	1150



PULP FIBER SUPPLY ANALYSIS - 1993

REGION: W. EUROPE

COUNTRY: UNITED KINGDOM

Pulp Industry 1993

Number of Pulpmills	7
Total Pulp Production (1000 tonnes)	1474
Deinked Pulp Production (1000 tonnes)	(874)
Virgin Fiber Pulp Production (1000 tonnes)	600
Non-Wood Pulp Production (1000 tonnes)	(0)
Bamboo	Hemp
Bagasse	Cotton
Straw	Reed
Other	
Wood-Based Pulp Production (1000 tonnes)	600
Derived Wood Fiber Demand (1000 ODMT)	657

Wood Supply Characteristics (Cum/ODMT = 2.2)

Conifer - 88%	Hardwood - 12%
Roundwood - 90%	Residues - 10% (Manf.)
<u>Forest Type</u>	<u>Est. Supply 1993 (1000 cum)</u>
Conifer - (E) Plantations (Picea, Pinus, Larix)	1300
Hardwood - Mgt. Natural Regeneration	165
TOTAL	1465



PULP FIBER SUPPLY ANALYSIS - 1993

REGION: E. EUROPE

COUNTRY: ALBANIA

Pulp Industry 1993

Number of Pulpmills	1
Total Pulp Production (1000 tonnes)	16
Deinked Pulp Production (1000 tonnes)	(0)
Virgin Fiber Pulp Production (1000 tonnes)	16
Non-Wood Pulp Production (1000 tonnes)	(0)
Bamboo	Hemp
Bagasse	Cotton
Straw	Reed
Other	
Wood-Based Pulp Production (1000 tonnes)	16
Derived Wood Fiber Demand (1000 ODMT)	33

Wood Supply Characteristics (Cum/ODMT = 2.4)

Conifer - 80%	Hardwood - 20%
Roundwood - 100%	Residues - 0%
<u>Forest Type</u>	<u>Est. Supply 1993 (1000 cum)</u>
Conifer - Mgt./UnMgt. Natural Regen.	64
Hardwood - (I) Plantations (Populus spp.)	16
TOTAL	80



PULP FIBER SUPPLY ANALYSIS - 1993

REGION: E. EUROPE

**COUNTRY: BOSNIA-HERZ., CROATIA,
MACEDONIA, SERBIA & MONT.**

Pulp Industry 1993

Number of Pulpmills	15
Total Pulp Production (1000 tonnes)	148
Deinked Pulp Production (1000 tonnes)	(0)
Virgin Fiber Pulp Production (1000 tonnes)	148
Non-Wood Pulp Production (1000 tonnes)	(0)
Bamboo	Hemp
Bagasse	Cotton
Straw	Reed
Other	
Wood-Based Pulp Production (1000 tonnes)	148
Derived Wood Fiber Demand (1000 ODMT)	277

Wood Supply Characteristics (Cum/ODMT = 2.4)

Conifer - 93%	Hardwood - 7%
Roundwood - 100%	Residues - 0%
<u>Forest Type</u>	<u>Est. Supply 1993</u> (1000 cum)
Conifer - Mgt./UnMgt. Natural Regen.	640
Hardwood - Mgt./UnMgt. Natural Regen.	35
TOTAL	675



PULP FIBER SUPPLY ANALYSIS - 1993

REGION: E. EUROPE

COUNTRY: BULGARIA

Pulp Industry 1993

Number of Pulpmills	6
Total Pulp Production (1000 tonnes)	127
Deinked Pulp Production (1000 tonnes)	(38)
Virgin Fiber Pulp Production (1000 tonnes)	89
Non-Wood Pulp Production (1000 tonnes)	(10)
Bamboo	Hemp
Bagasse	Cotton
Straw - 100%	Reed
Other	
Wood-Based Pulp Production (1000 tonnes)	79
Derived Wood Fiber Demand (1000 ODMT)	158

Wood Supply Characteristics (Cum/ODMT = 2.3)

Conifer - 58%

Hardwood - 42%

Roundwood - 64%

Residues - 36%

Forest Type

Est. Supply 1993 (1000 cum)

Conifer - Mgt. Natural Regeneration	200
Conifer - (I) Plantations (Pinus, Abies)	35
Hardwood - Mgt. Natural Regeneration	130
TOTAL	365



PULP FIBER SUPPLY ANALYSIS - 1993

REGION: E. EUROPE

COUNTRY: CZECH REPUBLIC

Pulp Industry 1993

Number of Pulpmills	9
Total Pulp Production (1000 tonnes)	427
Deinked Pulp Production (1000 tonnes)	(28)
Virgin Fiber Pulp Production (1000 tonnes)	399
Non-Wood Pulp Production (1000 tonnes)	(1)
Bamboo	Hemp
Bagasse	Cotton
Straw	Reed
Other - 100%	
Wood-Based Pulp Production (1000 tonnes)	398
Derived Wood Fiber Demand (1000 ODMT)	779

Wood Supply Characteristics (Cum/ODMT = 2.4)

Conifer - 90%	Hardwood - 10%
Roundwood - 80%	Residues - 20% (Manf.)
<u>Forest Type</u>	<u>Est. Supply 1993 (1000 cum)</u>
Conifer - (I) Plantations (Picea, Pinus, Larix)	1700
Hardwood - Mgt. Natural Regeneration	150
TOTAL	1850



PULP FIBER SUPPLY ANALYSIS - 1993

REGION: E. EUROPE

COUNTRY: HUNGARY

Pulp Industry 1993

Number of Pulpmills	3
Total Pulp Production (1000 tonnes)	17
Deinked Pulp Production (1000 tonnes)	(0)
Virgin Fiber Pulp Production (1000 tonnes)	17
Non-Wood Pulp Production (1000 tonnes)	(12)
Bamboo	
Bagasse	
Straw - 100%	
Other	
Hemp	
Cotton	
Reed	
Wood-Based Pulp Production (1000 tonnes)	5
Derived Wood Fiber Demand (1000 ODMT)	6

Wood Supply Characteristics (Cum/ODMT = 2.3)

Conifer - 7%	Hardwood - 93%
Roundwood - 100%	Residues - 0%
<u>Forest Type</u>	<u>Est. Supply 1993 (1000 cum)</u>
Hardwood - Mgt. Natural Regeneration	12
Conifer - Mgt. Natural Regeneration	1
TOTAL	13



PULP FIBER SUPPLY ANALYSIS - 1993

REGION: E. EUROPE

COUNTRY: LATVIA

Pulp Industry 1993

Number of Pulpmills	1
Total Pulp Production (1000 tonnes)	5
Deinked Pulp Production (1000 tonnes)	(0)
Virgin Fiber Pulp Production (1000 tonnes)	5
Non-Wood Pulp Production (1000 tonnes)	(0)
Bamboo	Hemp
Bagasse	Cotton
Straw	Reed
Other	
Wood-Based Pulp Production (1000 tonnes)	5
Derived Wood Fiber Demand (1000 ODMT)	11

Wood Supply Characteristics (Cum/ODMT = 2.4)

Conifer - 100%	Hardwood - 0%
Roundwood - 100%	Residues - 0%
<u>Forest Type</u>	<u>Est. Supply 1993 (1000 cum)</u>
Conifer - Mgt. Natural Regeneration	26
TOTAL	26



PULP FIBER SUPPLY ANALYSIS - 1993

REGION: E. EUROPE

COUNTRY: LITHUANIA

Pulp Industry 1993

Number of Pulpmills	1
Total Pulp Production (1000 tonnes)	6
Deinked Pulp Production (1000 tonnes)	(0)
Virgin Fiber Pulp Production (1000 tonnes)	6
Non-Wood Pulp Production (1000 tonnes)	(0)
Bamboo	Hemp
Bagasse	Cotton
Straw	Reed
Other	
Wood-Based Pulp Production (1000 tonnes)	6
Derived Wood Fiber Demand (1000 ODMT)	13

Wood Supply Characteristics (Cum/ODMT = 2.4)

Conifer - 100%	Hardwood - 0%
Roundwood - 100%	Residues - 0%
<u>Forest Type</u>	<u>Est. Supply 1993 (1000 cum)</u>
Conifer - Mgt. Natural Regeneration	31
TOTAL	31



PULP FIBER SUPPLY ANALYSIS - 1993

REGION: E. EUROPE

COUNTRY: POLAND

Pulp Industry 1993

Number of Pulpmills	18
Total Pulp Production (1000 tonnes)	776
Deinked Pulp Production (1000 tonnes)	(76)
Virgin Fiber Pulp Production (1000 tonnes)	700
Non-Wood Pulp Production (1000 tonnes)	(0)
Bamboo	
Bagasse	
Straw	
Other	
Hemp	
Cotton	
Reed	
Wood-Based Pulp Production (1000 tonnes)	700
Derived Wood Fiber Demand (1000 ODMT)	1392

Wood Supply Characteristics (Cum/ODMT = 2.4)

Conifer - 78%	Hardwood - 22%
Roundwood - 97%	Residues - 3% (Manf.)
<u>Forest Type</u>	<u>Est. Supply 1993 (1000 cum)</u>
Conifer - (I) Plantations (Pinus, Abies)	2850
Hardwood - Mgt. Natural Regeneration	550
TOTAL	3400



PULP FIBER SUPPLY ANALYSIS - 1993

REGION: E. EUROPE

COUNTRY: ROMANIA

Pulp Industry 1993

Number of Pulpmills	14
Total Pulp Production (1000 tonnes)	464
Deinked Pulp Production (1000 tonnes)	(27)
Virgin Fiber Pulp Production (1000 tonnes)	437
Non-Wood Pulp Production (1000 tonnes)	(25)
Bamboo	Hemp
Bagasse	Cotton
Straw - 57%	Reed
Other - 43%	
Wood-Based Pulp Production (1000 tonnes)	412
Derived Wood Fiber Demand (1000 ODMT)	781

Wood Supply Characteristics (Cum/ODMT = 2.1)

Conifer - 30%	Hardwood - 70%
Roundwood - 90%	Residues - 10%
<u>Forest Type</u>	<u>Est. Supply 1993 (1000 cum)</u>
Hardwood - Mgt. Natural Regeneration	1050
Conifer - (I) Plantations (Picea)	600
TOTAL	1650



PULP FIBER SUPPLY ANALYSIS - 1993

REGION: E. EUROPE

COUNTRY: SLOVAKIA

Pulp Industry 1993

Number of Pulpmills	3
Total Pulp Production (1000 tonnes)	239
Deinked Pulp Production (1000 tonnes)	(14)
Virgin Fiber Pulp Production (1000 tonnes)	225
Non-Wood Pulp Production (1000 tonnes)	(0)
Bamboo	Hemp
Bagasse	Cotton
Straw	Reed
Other	
Wood-Based Pulp Production (1000 tonnes)	225
Derived Wood Fiber Demand (1000 ODMT)	432

Wood Supply Characteristics (Cum/ODMT = 2.2)

Conifer - 45%	Hardwood - 55%
Roundwood - 100%	Residues - 0%
<u>Forest Type</u>	<u>Est. Supply 1993 (1000 cum)</u>
Conifer - (I) Plantations (Picea, Pinus Larix)	500
Hardwood - Mgt. Natural Regeneration	470
TOTAL	970



PULP FIBER SUPPLY ANALYSIS - 1993

REGION: E. EUROPE

COUNTRY: SLOVENIA

Pulp Industry 1993

Number of Pulpmills	3
Total Pulp Production (1000 tonnes)	175
Deinked Pulp Production (1000 tonnes)	(89)
Virgin Fiber Pulp Production (1000 tonnes)	86
Non-Wood Pulp Production (1000 tonnes)	(0)
Bamboo	
Bagasse	
Straw	
Other	
Hemp	
Cotton	
Reed	
Wood-Based Pulp Production (1000 tonnes)	86
Derived Wood Fiber Demand (1000 ODMT)	140

Wood Supply Characteristics (Cum/ODMT = 2.4)

Conifer - 76%	Hardwood - 24%
Roundwood - 84%	Residues - 16% (Manf.)
<u>Forest Type</u>	<u>Est. Supply 1993 (1000 cum)</u>
Conifer - Mgt./UnMgt. Natural Regen.	260
Hardwood - UnMgt. Natural Regen.	70
TOTAL	330



PULP FIBER SUPPLY ANALYSIS - 1993

REGION: CIS

COUNTRY: RUSSIA

Pulp Industry 1993

Number of Pulpmills	50
Total Pulp Production (1000 tonnes)	5501
Deinked Pulp Production (1000 tonnes)	(147)
Virgin Fiber Pulp Production (1000 tonnes)	5354
Non-Wood Pulp Production (1000 tonnes)	(0)
Bamboo	Hemp
Bagasse	Cotton
Straw	Reed
Other	
Wood-Based Pulp Production (1000 tonnes)	5354
Derived Wood Fiber Demand (1000 ODMT)	10457

Wood Supply Characteristics (Cum/ODMT = 2.5)

Conifer - 82%	Hardwood - 18%
Roundwood - 77%	Residues - 23% (Manf.)
<u>Forest Type</u>	<u>Est. Supply 1993</u> (1000 cum)
Conifer - Original Forest	19750
Conifer - Mgt. Natural Regeneration	2500
Hardwood - UnMgt. Natural Regeneration	3700
TOTAL	25950



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