

"Woodchips - A Global Commodity"

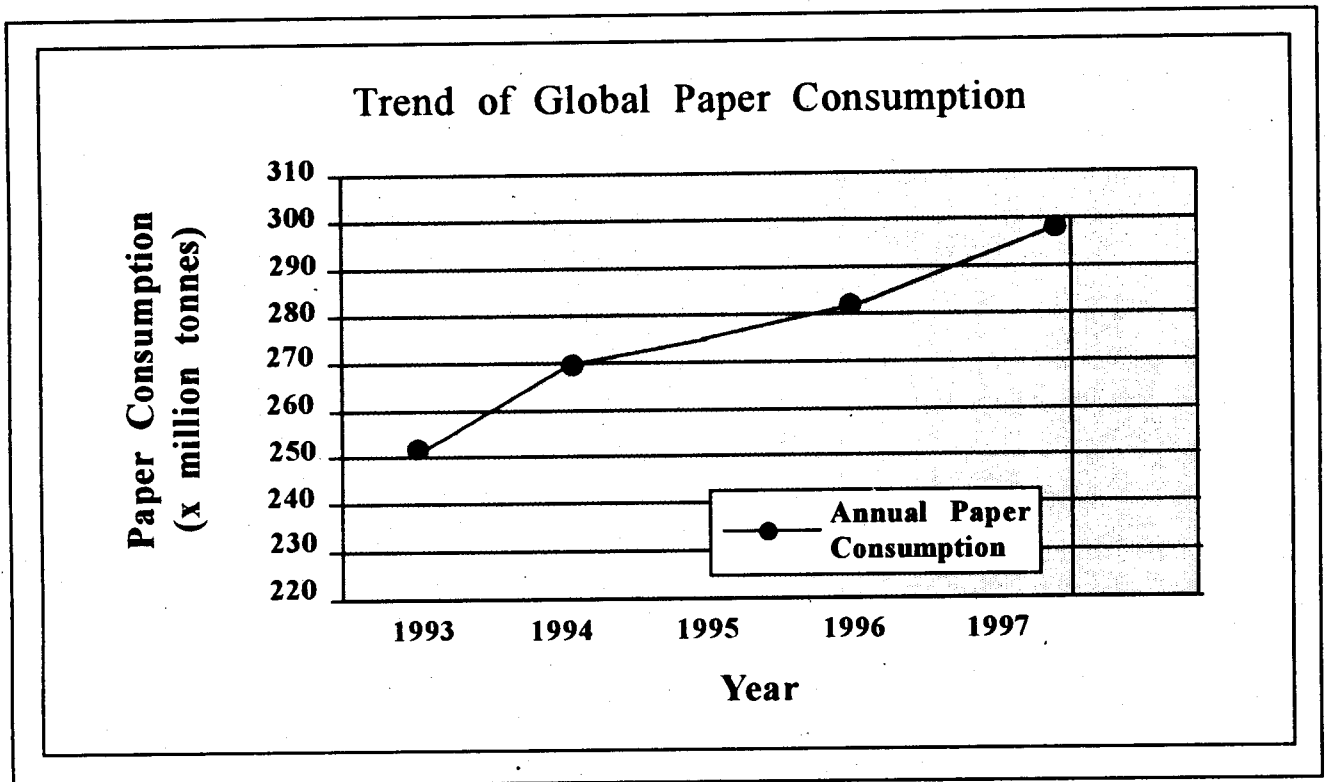
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INCREASING GLOBAL DEMAND FOR PAPER & PAPER BOARD

The international trade in woodchips has grown to become a large global industry with 130 specialised ocean freighters engaged in transporting woodchips to and from ports all around the world. These ships

developed, the role of recovered paper, and explains why transporting woodchips is preferred to transporting logs.

The world consumption of paper and paperboard has increased steadily from 251 million tonnes of paper and board in 1993 to 297 million tonnes in



Source : Pulp & Paper Industry magazines July 1995, July 1996, July 1997, July 1998.

have an average payload of 40,000 tonnes, so if all these vessels were loaded at one time a total of over 5 million tonnes of woodchips would be in transit, illustrating both the magnitude and scale of the international woodchip trade. This paper outlines some of the factors that help explain why this trade

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1997, an average increase of little over 9 million tonnes per annum. This strong growth in demand, together with localised decreases in pulpwood availability, created the circumstances leading to trade in fibre for the manufacture of firstly pulp then paper or paperboard. Internationally fibre is usually traded as logs, woodchips or recovered paper but of the three, woodchips predominate.

Within the global market, the Asian region has had the fastest growth with consumption rising from 73 million in 1993 to 96 million tonnes in 1997, which was about half the world growth or 4.5 million tonnes per annum. Asia as a region imports fibre, pulp and paper. North America is the primary supplier of these products to the Asian market.

Unfortunately, economic factors in 1998 has resulted in many Asian Countries undergoing a period of recession which will no doubt change these historical trends. In spite of these uncertainties there are a number of fundamental trends which will give guidance to how supply and demand will be met over the next decade.

India currently has a low per capita consumption of paper but with its large population and rapidly growing economy, paper consumption is expected to reach about 5 million tonnes by 2005. Planning how to satisfy this expected demand is the topic much debate within the industry as traditional sources of fibre supply are limited.

Pulp mills decide to import fibre for a variety of reasons. The high capital cost of pulp mills result in great pressure to maximise production of pulp to decrease the unit cost. Importing fibre offers a way a pulp mill can obtain additional raw materials when production is constrained by the limited availability of local supplies. In other cases the local supplies may be dwindling due to resource constraints or simply facing increased competition from other users of the resource.

Imported fibre can provide the means of maintaining pulp production for a period of time to allow locally established plantations the time to grow to become commercially available for harvest. In other cases, imported chips are sought as a means of introducing a component of high quality fibre which will improve the papermaking properties of the pulp.

Maintaining water quality has forced countries like china, to close thousands of these small pulp

mills which were based on non-wood raw materials have high silica content which makes treatment of the black liquor difficult and expensive. Also, the small scale of many non-wood pulp mills make it difficult to justify the effluent control equipment. Eucalypt woodchips as a raw material contain negligible silica thus making it easier for mills to treat the black liquor in conventional recovery boilers.

NORTH AMERICA

North America is and has been the major consumer, producer and exporter of fibre products, so it is worthwhile considering trends in this region as they will affect significantly on global markets.

Whilst North America is likely to continue to be a significant exporter of fibre for the next decade, there are indications that wood industry growth is becoming resource limited. In the Pacific Northwest of United States large areas of federal land has been withdrawn from timber production and resulted in a decrease in the annual cut of 51 million cubic metres between 1989 and 1995.

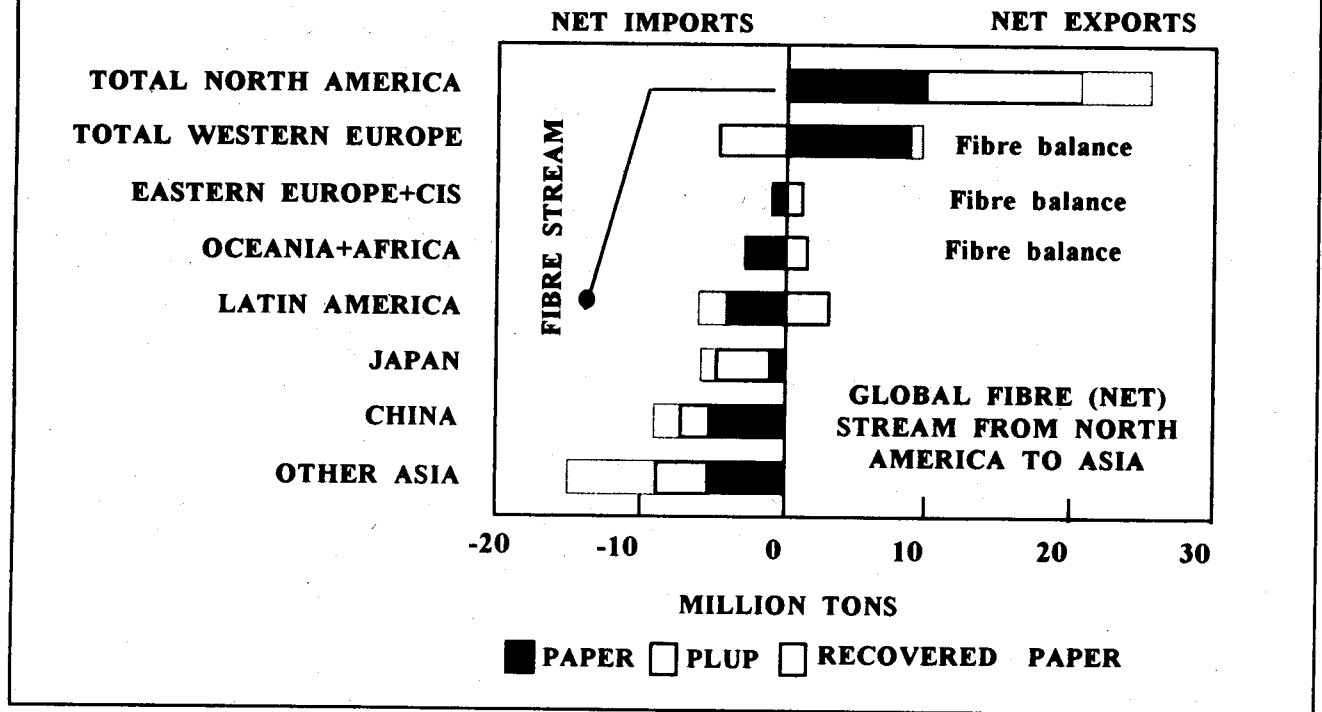
British Columbia, in western Canada like the US Pacific Northwest, has seen its annual harvest decline from about 90 million cubic metres in the late eighties to about 75 million cubic metres in the mid nineties. Further reductions are the topic of considerable public debate within British Columbia.

This decrease in resource availability in British Columbia and the Pacific Northwest was replaced in part by increased timber production from the US South and from central and eastern Canada and in part by the increased use of a recovered paper. A new wood product, oriented strand board, has become widely accepted in North America and a number of new mills have opened, adding their wood requirement to the competition for pulpwood resource.

Other visible signs of resource shortages include the closure of six pulp mills in the Pacific Northwest in the nineties and several other mills in that area modified their process use to recovered paper as raw material. In 1997-98 several US companies located in both the US South and the Pacific Northwest imported woodchips from South America.

North American forest companies, including Champion Simpson, Westvaco and Stone Containers, have been investing in both plantations and wood utilising industries in South America to ensure their

Net Trade Balance of Paper And Paperboard Fibre in the World by region 1996



Source : "The global wastepaper balance" Presented by I. Ervasti, Senior Consultant, Jaakko Poyry Consulting Oy, Finland, at the Fibre Asia Conference, October 28-29, 1997, Singapore.

companies have resource availability for future growth.

In summary, it would seem that growth of forest industry in North America is becoming resource limited but that consumption is continuing to grow and as a result, exports will decrease.

RECOVERED PAPER

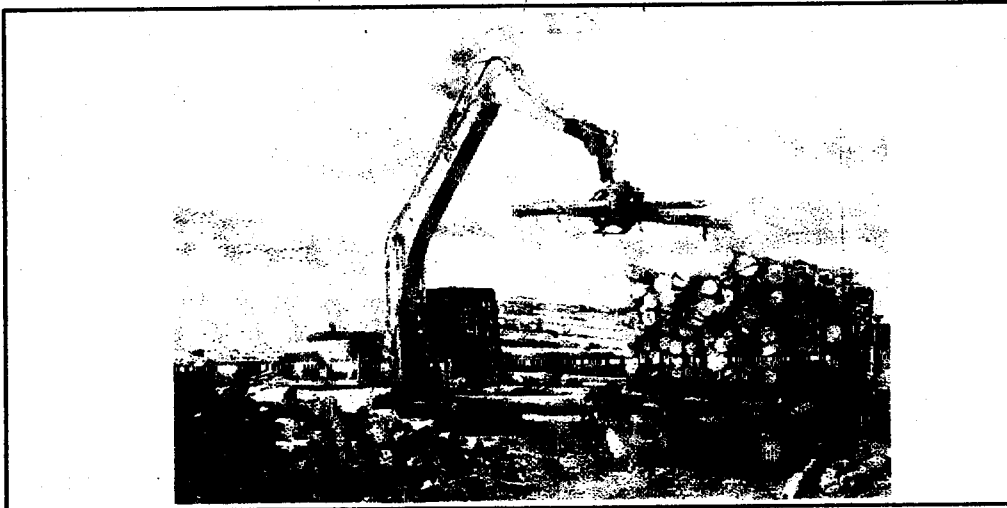
The use of recovered paper has steadily risen throughout the world over the past decade, partly due to government regulation within developed countries encouraging recycling of paper, and partly in response to the commercial opportunities to supply fibre to countries and regions where fibre shortages have developed. Recovered paper is usually used in the same or a lower grade of paper, thus one finds newsprint, tissue, liner and fluting and carton boards using 40 to 60% recovered paper whereas only 10% recovered paper is used in the making, printing and writing papers. It is difficult and unusual to make a higher grade of paper from lower grade recovered paper. Consequently, recovered paper does not compete

to any great extent with logs or chips in the supply of fibre to mills producing writing and printing grades but logs, woodchips and recovered paper all compete heavily in the other grades.

In 1997 Evasti, in the forementioned paper "The global wastepaper balance" estimated that 43% of the 281 million tonnes of paper and board consumed in 1996 was made from recovered paper. Within this large market North America, in particular United States, recovered 38 million tonnes and exported about 6.5 Million tons in 1996 to Canada, Latin America and several Asian countries. It is likely that United States will continue to be a major exporter of recovered paper but competition from domestic mills will increase as other raw material becomes more difficult and expensive to access.

COMPARISON OF SHIPPING LOGS VERSUS CHIPS

General cargo ships are usually designed for a cargo with a bulk density of about 1 to 1.5 cubic



Loading a truck with export pulplogs in Tasmania, Australia

metre to weight 1 tonne. Logs and woodchips both are bulky material and have similar stowage rates of between 2 to 2.3 cubic metres per tonne. Japan started to import greater quantities of woodchips in the seventies; they contracted the construction and full-time charter of specialised bulky woodchip carriers with high sides and large hold capacities.

B. Byfors reported at the 5th International Woodchip Conference, Rotorua, New Zealand, 23-24 March, 1998, that there were 130 wood chip carriers of which 106 were committed to Japan principals. He also reviewed the age profile of woodchip carriers, revealing that 87 ships were less than 10 years old, 25 ships between 11 and 15 years old, 3 ships between 16 and 20 years old and 15 ships between 21 and 25 years old. From the age profile one can see there is a continuing investment in specialised woodchip freighters. There is no doubt the efficiencies in ocean freight have greatly assisted the world trade of chips by keeping transport costs low in real terms.

The average size of a woodchip carrier is 3.2 million cubic feet which equates to about 40,200 green metric tonnes of our Tasmanian hardwood woodchips.

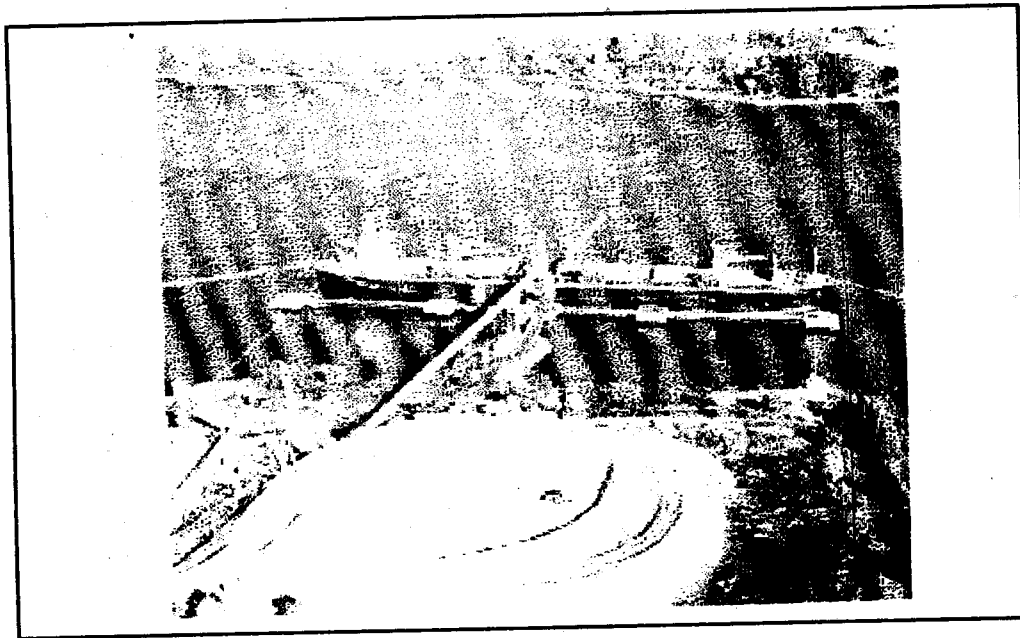
Log vessels, like chip vessels, are purpose built vessels which were primarily designed to carry saw logs. Saw logs are usually long, straight, larger diameter logs which facilitate loading, stowage in and on the ship and unloading. Because some of the logs can be stored on the deck, log ships do not need such bulky holds as woodchip ships but must be designed

with large hold opening and appropriately strengthened decks.

Pulpwood logs are often short and crooked resulting in much higher transport and handling costs than saw logs. One of our Tasmanian mills exports both logs and woodchips which provides us the experience to compare the merits of handling logs and woodchips.

By their small, uniform nature woodchips can be handled as a bulk commodity using a largely automated system of conveyor belts to transfer the chips from the storage area to and into the ship. Loading rates for wood chips of 7,000 tonnes per shift are easily achieved and production usually takes place on a 24 hour basis, thus loading a 40,000 tonnes woodchip ship takes about 2 days.

Logs vary greatly in diameter, length and straightness. Accordingly, loading rates vary greatly with high costs and poor productivity associated with small short logs as compared to higher productivity with large straight logs. In our situation, 80% of our pine pulp logs were cut to lengths of 6.1 metres and the remaining 20% a length of 11.1 meters. About 3 logs weighed about 1 tonne. We achieve about 1,500 tonnes per shift which is above the normal ship loading standard productivity. With logs, we operate on a two-shift basis, thus to load a 40,000 tonnes log ship would take in the order of 13 days. When compared to woodchips, the longer time on the wharf represents a significant cost to the ship owner which is reflected in the charter rate.



Shiploading woodchips in Tasmania

Woodchips can be stored safely and efficiently in compact storage piles where one would only require 1.2 hectares to store about 40,000 tonnes. Logs, on the other hand, require a much larger storage area and would take about 7 hectares to store 40,000 tonnes. This results in higher rental charges for log storage and often to find sufficient area one is forced to store logs at some distance from the port.

Loading logs are often restricted to a two-shift operation either due to wharf labour considerations or restrictions on the use of shuttle trucks between the storage areas and the port. Loading woodchips because of compact, highly mechanised nature is usually conducted on a 3 shift or 24 hour basis.

Equipment and men required for loading pulp logs on a 7 hour continuous shift

equipment	manpower	equipment	manpower
4 excavators to load shuttle trucks	4 operators	2 dozers to push chips into the reclaim	2 operators
13 trucks with a payload of 26-28t within 3km	13 drivers	no trucks required	
ships cranes 2 at a 30t capacity	14 wharf labour 1 staff	shore based ship loader	4 employees

Another substantial saving for customers receiving wood chips is that the losses associated with chipping are left behind at the supplier's chip mill, thus reducing the effective cost of ocean transport. In our experience the chipping loss averages about 6%.

In our situation in Tasmania, the financial case was so much in favour of handling woodchips that two of our mills do not have the capability of exporting logs.

COMPARISON OF MEN AND EQUIPMENTS

The following table summarises the loading of

Equipment and men required for loading chips on an 8 hour shift

RAW MATERIAL

both log and woodchips on the basis of a common vessel size of a 40,000 tonne ship, although in practice log ships are generally smaller than woodchip ships.

JAPAN

Within the Pacific region, Japan has dominated both softwood and hardwood woodchip markets.

Of a total of 15.5 million bone dry tonnes (bdt) 13.7 million bdt was shipped to Japan, 0.7 million to Taiwan and 0.5 million bdt to Taiwan, 0.5 million bdt to USA, and 0.2 million bdt to Canada.

Pulpwood imports have risen from 18.8 million cubic metres in 1990 to 25.3 million cubic metres in 1997. Most of the increase occurred in hardwood woodchips which increased from 11.3 million cubic meters in 1990 to 18.1 million cubic meters in 1997 with the United States and Australia being the two major suppliers.

The fibre trade is a large business in Europe as well with large volumes of pulpwood and saw log being imported into the European countries of Sweden,

PACIFIC RIM WOOD CHIP TRADE, 1996 (THOUSAND BDMT) MARKETS

MARKETS								
	Japan	Japan	Korea	Taiwan	USA	Canada	Total	Percent
	Hardwood	Softwood						
Argentina	147	0	0	0	0	0	147	0.9%
Australia	2,651	803	0	17	0	0	3,471	22.4%
Brazil	235	264	0	0	0	0	499	3.2%
Canada	52	242	0	0	225	0	519	3.4%
Chile	1,434	98	21	81	230	0	1,864	12.0%
China	633	24	432	310	0	0	1,399	9.0%
Ecuador	199	0	0	0	0	0	199	1.3%
Fiji	0	183	0	0	0	0	183	1.2%
Indonesia	257	0	0	15	0	0	272	1.8%
Malaysia	79	0	0	0	0	0	79	0.5%
N. Zealand	67	211	0	16	0	0	294	1.9%
PNG	37	0	0	0	0	0	37	0.2%
Russia	0	63	0	0	0	0	63	0.4%
S. Africa	993	0	0	0	0	0	993	6.4%
Taiwan	25	0	0	0	0	0	25	0.2%
Thailand	176	0	0	0	00		176	1.1%
USA	3,304	1,361	211	17	0	191	5,084	32.8%
Vietnam	150	0	0	33	0	0	183	1.2%
TOTAL	10,439	3,249	664	489	455	191	15,487	100.0%

Source: Country import statistics, International Woodchip and Pulplog Trade Review, 1998 Edition DANA/Flynn Research

Finland, Norway, France, Portugal and Spain. Most trade was between the countries of continental Europe but significant quantities of pulpwood were imported from Brazil, Uruguay and Argentina.

CONCLUSION

Indian pulp companies that are faced with fibre shortages will be considering a range of options including woodchips. Purchasers of wood chips usually are concerned about the quality of the fibre, the reliability of supply and, of course, the cost.

Two factors that support the expansion of the woodchip trade from Tasmania are firstly, Tasmania is well located in the South Pacific to serve the Asian markets, being some 16 sailing days from Japan and about 18 days from India. Secondly, Tasmania is in

a fortunate forest resource position; due to a recent forest policy review there is surplus Eucalypt pulpwood available for export on a long-term basis. The governments of Tasmania and Australia developed and signed a Regional Forest Agreement in November 1997 with a term of 20 years.

The Regional Forest Agreement provides a comprehensive network of reserves which now cover 40% of Tasmania's land surface. With these conservation areas defined and reserved, and the State and Federal government agreements on management, the forest industry can confidently look to develop new long term supply arrangements.

In conclusion I urge managers of Indian pulp mills who need fibre to consider importing wood chips to provide long term supply.