

Where will PAPER be made

in the future?

Emerging trends are challenging the U.S. paper industry's global leadership in paper and board production. The industry can revitalize itself through better trade policy, marketing, branding, enhanced cost competitiveness, and other strategies.

IN THIS ARTICLE, YOU WILL LEARN:

- How the life cycle of a paper mill affects competitiveness
- Changing global demand trends for paper and board
- The "Top 10" imperatives for the U.S. paper industry

ADDITIONAL RESOURCES:

- The Center for Paper Business and Industry Studies (CPBIS)
www.paperstudies.org
- International Paper
www.ipaper.com

Editor's Note: This article is adapted from a presentation by Dr. Phillips at "Rethink and Discovery 3," a session held at the October 2002 North Carolina State University Pulp and Paper Foundation meeting. The Rethink and Discovery series is organized by The Center for Paper Business and Industry Studies (CPBIS), Atlanta, Georgia, USA.

Paper as a form of communication is a global commodity product with one longest lives of any product known. Paperboard for packaging is newer but no less ubiquitous worldwide. Ample evidence suggests paper consumption in developed nations is slowing or declining. Elsewhere, demand is growing at a rate that matches growth in gross domestic product (GDP). Paper and board are undoubtedly in the "slowing demand" portion of their life cycle curve in developed nations, but is growing rapidly in Asia. An important question is where will paper be made in the future?

To answer this question, requires an

examination of fundamentals. In business, the first fundamental is demand for a product. Demand creates institutions to supply the product for profit or some societal need such as jobs. Growth in demand creates an incentive to re-invest.

What do we know about demand, supply, and growth of paper and board? Worldwide, the current demand for these products is approximately 320 million metric tons. Almost 90% of that demand comes from North America, Western Europe, and Asia. Per capita demand is highest in North America, followed by Western Europe and Australasia. Growth in demand is currently greatest in Eastern Europe and Asia and is negative in North America.

Per capita consumption of paper and board correlates with regional wealth. Below a certain threshold of annual income—perhaps US\$ 5000—consumption is very low, probably because little disposable income goes to discretionary uses. Above that threshold, consumption of paper and board grows to more than 200 kg per person. Comparing growth in

paper and board consumption vs. growth in GDP per capita supports a hypothesis that demand increases as the wealth of nations and the prosperity of their citizens increase. At some point, demand becomes saturated, and additional wealth does not drive additional demand.

Some uses for paper are dying, and others are slowing in more developed countries. Various factors contribute to this, such as population trends. Fewer young adults read newspapers in favor of other sources of news. Demand trends favor some products such as tissue and towels. New products or new applications for paper and board—products and applications that amount to significant new volumes as opposed to substituting for old volume—are difficult to find. Everyone in the paper industry should find this a source for concern.

Consumption of paper and board has grown fastest in developing countries, while growth in demand is stagnant or negative in developed nations. Examining the question of saturation in the most developed nation—the United States, **Fig. 1** shows growth in demand over the past 11 years for some important paper and board products. Newsprint is declining, linerboard is nearly flat, and uncoated freesheet and coated groundwood have a 2%–3% growth per year.

LOST MARKET SHARE

Paperboard packaging has lost share to other materials. Since 1990 in the United States, plastic packages have more than tripled. Paperboard packages are up only 12%. Glass has declined over that period (see **Figure 2**). Why are paperboard producers not sufficiently clever to capture more applications?

Demand in developed economies will continue to be a function of growth in GDP, but may be reaching saturation and decline in certain grades. Demand in developing economies continues to grow with expansion of GDP. These nations rep-

resent the largest growth opportunities for the future.

Another important trend is emerging that is at least as significant as the changing dynamics of demand. Previously, paper and board manufacturing economics drove production to areas of low cost and abundant fiber. Currency valuations and increasing labor costs in developed nations have radically changed the dynamics of supply in recent years. The investment in large-scale paper and board machines in Asia with industry consolidation and asset rationalization has also changed global production dynamics.

Inherent to investment decisions is the basic need to generate a satisfactory return on capital employed—a rate greater than the cost of capital. Low tax rates on earnings, a high rate of sales per unit of capital employed, or a high profit margin on each sale can generate a high return on investment. New mills typically have an attractive operating margin because they employ the newest technology and are in regions where factory costs are low. The capital employed is enormous.

LIFE CYCLE OF A PAPER MILL

These considerations provide a model of the life cycle of a paper mill. An investment has four phases that requires tracking the history of capital employed compared with the return on investment.

Initially, the return on investment (ROI) will be low because investment cost is high despite a low manufacturing cost. Companies have many choices for making their investments in new capacity. They

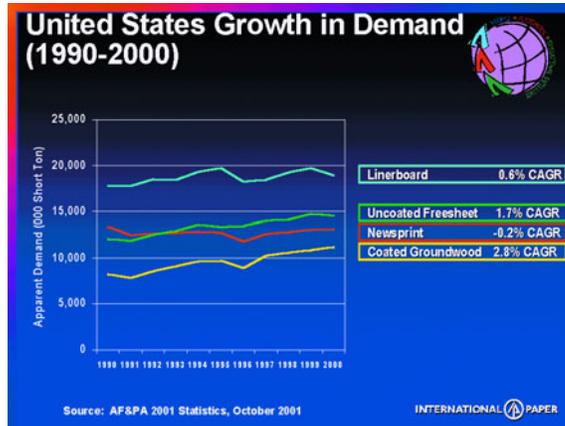


Figure 1: U.S. growth in demand for past 11 years.

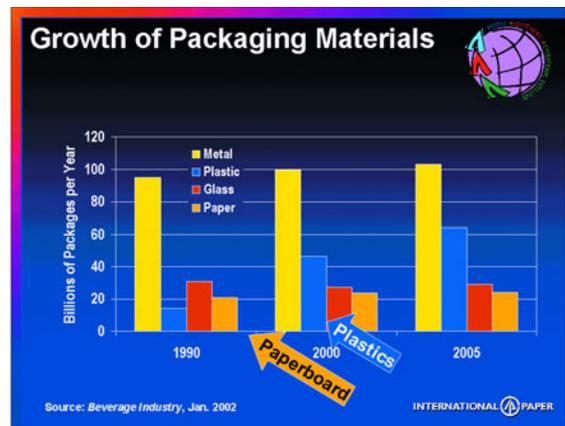


Figure 2: Growth of packaging materials.

will usually select locales where the market is growing, the investment and manufacturing costs are low, and the local officials offer the greatest incentives.

Over time, the capital employed depreciates. Assuming no major changes in the product being manufactured or the sales price enjoyed, cash flow will be highest during this second phase of the investment life cycle. Some large mills have sustained high ROI for many years because they have had continual renewal with more modern and efficient machinery or have otherwise offset the inevitable increases in cost with even greater cost reductions.

In the United States, most facilities are in the third phase where the investment is cash positive, the investment cost is highly depreciated, and the ROI therefore appears

favorable. Because little investment has occurred, costs have probably increased, and the asset is at risk if nothing is done. In this phase, the investment cost to improve operating margin is a significant barrier to reinvestment. The location has probably seen labor and fiber costs grow to become substantial disincentives to reinvestment.

Management often decides to “harvest” the asset until it becomes unprofitable. In many cases, product repositioning occurs. An investment that is high cost in a commodity grade may enjoy a more favorable cost position in a higher valued specialty product to boost capital turnover and operating margin. One option is for the owning company to make no investment in the declining asset but take the money overseas to a new location better situated to a growth market and a manufacturing base with lower costs.

Without repositioning or without reinvestment, the asset will fall into the fourth phase. Here no amount of product repositioning will save the investment. It has reached the end of its useful life and is only attractive to a new owner who may be able to reduce personnel, bargain for more contract flexibility, renegotiate wage rates, and secure tax incentives to continue perhaps only for a short time. One wonders why such desperate straits are necessary before taking action.

Today, the global landscape has changed. Many assets in developed nations are aging and approaching the third phase of the life cycle. Because demand is diminishing and factor costs are high, no incentive exists to make the investments needed to put the facility costs back into the second phase or certainly into the first phase.

UNITED STATES

Because of these trends, the United States continues to experience a 25-year trend of declining renewal of

assets measured by the ratio of capital spending over depreciation. High spending levels in the early 1970s were justified by rapid expansion in demand, but spending in the middle 1980s led to excess capacity and declining fortunes.

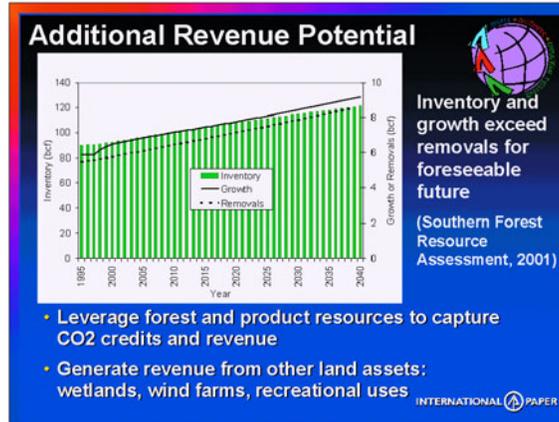


Figure 3: Additional revenue potential.

The situation in the United States has led to an unprecedented number of mill closures and machine shutdowns. In linerboard for example, approximately 2.6 million tons has disappeared since 2001. This is 6.7% of North American capacity. In uncoated white papers, the figure is 12.4% of capacity.

Perhaps these closures occurred because the mills eventually moved into the fourth phase of the life cycle. Which element of cost competitiveness the affected mills lost is unknown, but one factor is certainly estimated labor costs per operating man-year in the United States, which are 50%–2000% higher than competitor nations.

Can scale compensate for the high unit labor costs? While some linerboard mills in the United States are among the most competitive in terms of linerboard machine speed and width, some machines in North America feature a deadly combination of “slow and narrow,” leading to very high investment cost and very low incentive to close the gap.

None of this necessarily signals the demise of the U.S. paper industry. The United States is the greatest

source of paper and board demand in the world by a large margin and will stay that way for the near future. While foreign exchange rates have indeed favored imports to the United States, these rates will fluctuate with time, reflecting the mood of the financial community in making investments in one part of the world over another.

The competitive issues discussed here are not primarily currency exchange rate driven. They are a consequence of the standard of living in the United States, where people can demand high wage rates to do jobs that others around the world will perform at only a fraction of the wages paid in the United States. This is not a criticism of the system in the United States. The U.S. standard of living, combined with personal freedom, is a benchmark for the world. Companies pay what the local market demands for the talent required to do a job.

We need more than lower exchange rates to avoid repeating the unfortunate history of the steel and textile industries in the United States. We must rediscover what counts in great industries. Consider now the following fundamentals. Successful companies excel in any three of four main areas:

- Superior technology
- Exceptional customer focus
- Highly engaged workforce
- Very efficient assets.

One may have a temptation to nominate the paper and board industry as the next large domestic industry to flee overseas as the steel and textile industries did. Although the paper and board industry has some similarities to the steel and textile industries, the differences are the significant factors.

TEN IMPERATIVES

With apologies to David Letterman, I offer my “Top 10 Imperatives for the Paper Industry in the United States.” Each of the following items

requires successful execution for this industry to compete against other media and other nations.

10. Continue to exploit the sustainable aspects of the paper and board industry. The forest products industry has the sustainable natural resources necessary to generate more revenue. These resources can be infinite. **Figure 3** shows that the industry is fully sustainable in the southeastern United States—the location of most working forests. More revenue can come from these and other forests. The changing regulatory world is creating new opportunities to generate additional revenue from land. This includes selling CO₂ credits and identifying more multiple uses for resources to include recreational areas and wind farms.

9. Increase awareness of the potential to reuse waste. The paper industry has achieved a product recovery and recycle rate that surpasses most other industries. The product distribution system of the paper industry favors paper waste recovery, but virgin products are generally more economical to produce. Exported recovered paper will eventually return to our paper machines instead of those in Asia.

8. Use the potential that world-class supply chain management offers. The United States has a medium rating in production, but a world-class rating in consumption. Proximity to the customer base produces an inherent advantage in the supply chain—purchasing, inventories, and customer fulfillment—that provides a competitive advantage. Customers always rate dependability of quality and delivery very high.

7. Level the playing field regarding tariffs and non-tariff barriers. Other parts of the world offer industry subsidies more aggressively than the United States. This country does not favor tariffs. It needs removal of the non-tariff barriers that effectively close the Japanese and other markets to U.S. products. The U.S. paper industry must expose the hypocrisy

that pretends that trade is free when the scales are decidedly against those who play by the rules.

6. Enlist help from customers to help level the playing field. Major companies in the United States believe in sustainable forestry because doing so is correct. Many customers demand sustainable forestry and should require all suppliers to meet the same demanding standards for forest management and paper manufacture. All customers should responsibly incorporate such standards into an environmental purchasing policy for all participating suppliers. Many overseas competitors flood markets in the United States with products from unsustainable forests. They offer a substantial cost advantage that many customers cannot resist.

5. Grow the top line through product technology. Superior technology to manufacture products can help grow and expand existing markets. Aggressive marketing these advanced products' advantages can protect paper and board markets.

4. Grow the top line through new products for markets not traditionally served by paper and board. The single-serve package for water uses plastic. Prices of bottled water in a convenience store exceed the price paid at the same store for gasoline. As water goes from its current commodity status to “designer-flavored” water, the paper industry has another chance to take advantage of the laminated polymer barrier technology that makes citrus drinks packaged in paperboard taste better.

3. Learn the power of brands. Tissue producers have understood this lesson for many years. As copy paper changes from printing largely by laser and photocopy to ink jet and the channel to market changes from regional warehouse to local office superstore, the importance of establishing brand identity to consumers will become more important.

2. Understand the need to be cost competitive. Mergers and acquisitions in the United States could lead to

more efficient and cost-competitive manufacturing systems. Larger companies can look at a mill system as a portfolio of investments. Those in the fourth state reviewed earlier typically have low asset value and high costs. In small companies, they represent a significant part of the total asset value of the company. Their closure would be difficult. From a financial viewpoint, a large company can prune weaker facilities and concentrate future investment in lower cost facilities to keep them competitive for the long term.

1. Invest not only in machine, bricks, and mortar, but also in people.

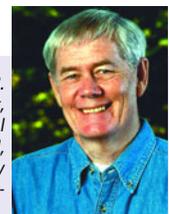
Although compensation of workers in the United States leads to a loss of competitiveness, the potential quality of that workforce can lead to better conditions. If we only did what we know how to do and did it always, we could easily enjoy a 10% improvement in costs and productivity. This is the difference between best performance and average performance. This would be a good start. The finish should be a work environment where the workforce and management are partners. The partners share information within the plant and act like company owners, because they are.

MEETING CHALLENGES

Three questions remain:

- Are the 10 imperatives listed above correct?
- Will meeting the challenges in the imperatives be sufficient?
- What prevents the paper industry from meeting the challenges?

Answering these three questions will provide the answer to the primary question posed at the beginning. Where will paper be made in the future? **S!**



About the Author: Richard B. Phillips is senior vice president, technology for International Paper. He is based in Loveland, Ohio, USA. Contact him by email at richard.phillips@ipa-paper.com .