

2020 VISION—FOCUSING ON THE FUTURE

DOUGLAS J. BURKE

THE FUTURE AS SEEN BY SOME OF THE INDUSTRY LEADERS WHO HELPED FRAME AGENDA 2020

The basic market forces shaping the industry as it enters the 21st century are the same as those that have been driving manufacturers since the dawn of the industrial age. Consumer demand dictates the mix of production. Manufacturers of each product compete for market share by making better products at lower cost. Technology is the tool that adds value to products and boosts the efficiency of the manufacturing process. Research develops the technology that provides the competitive edge. Of course, this simple model doesn't tell the whole story. If it did, there would be no business cycles, and the gurus who predict future trends would all be in job retraining.

Our actions today are guided by our expectations of what tomorrow will bring, and our expectations, in turn, are shaped by past experience. This circularity is what makes predicting the future so difficult. The world is dynamic, and the best we can do is note the current trends and extrapolate them into the future.

The key issue facing industry today remains competitiveness, but this is no longer as simple as making a better product at lower cost. Societal values are evolving in the face of population growth and the economic expansion of underdeveloped nations. Resource management is no longer just a technique for lowering overhead. The issues of sustainability, environmental stewardship, and global competition are now part of the mix. The definition of "added value" has expanded from higher product quality and greater process efficiency to include sustainable production and minimal impact on the environment. The end result is that technology must serve more masters, and the research that sustains technology must serve them as well.

LONG-TERM PLANNING

U.S. industry is often criticized for being nearsighted and planning only for the short term. Indeed, many would argue that the technological leadership in our industry

has shifted toward Canada and the Scandinavian countries over the past few decades. Fair or not, such criticisms played a role in the development of Agenda 2020, our industry's effort to elucidate its vision of the future 25 years from now. This was no idle exercise in crystal gazing. Its principal purpose was to establish a framework for cooperative, precompetitive research that will help the industry remain healthy and competitive through 2020 and beyond.

The industry and the DOE are coordinating and funding research projects in these areas. For more detail, see "The basics of Agenda 2020" by Josephine Cooper, which is a companion article in this issue, p. 32.

WHOSE VISION?

Agenda 2020 was an industrywide effort coordinated by the industry's national trade association, the American Forest and Paper Association (AF&PA). A CEO-level working group empaneled and guided the efforts of the Agenda 2020 Working Group, which produced a research agenda with input from over 30 institutions supporting industry research. *TAPPI JOURNAL* invited members of the Agenda 2020 Working Group to share their perspectives on the impact of Agenda 2020 and other forces and trends that will shape our industry in the next two decades.

Weyerhaeuser Co. sent a written response that represents the combined thinking of Dick Erickson, vice president-manufacturing and technology; Rex McCullough, vice president-Timberland Forestry Research; and Del Raymond, director of strategic energy alternatives. The other contributors were Allen Koleff, Stone Container Corp.'s vice president-environmental, energy and process technology; Gerard P. Closset, Champion International Corp.'s vice president-applied technologies; William J. Nicholson, Potlatch Corp.'s manager of corporate energy services; and Benjamin A. Thorp, Chesapeake Corp.'s vice president-manufacturing technology.

WILL AGENDA 2020 CHANGE THE INDUSTRY?

Nicholson believes it is too early to make specific predictions, citing the precompetitive nature of the funded research and "the long time and effort from precompetitive research to wide implementation of commercialized developments that affect the viability of industry." Nevertheless, he believes that "Agenda 2020 should lead to improvements in the six technical areas selected, and the industry should become more competitively robust than it would have been without the effort."

The respondents from Weyerhaeuser were similarly optimistic. "If we can align research activities in a well-thought-out vision of our industry's future, we will be better off than if we let it evolve in a fragmented way. Agenda 2020 is a tool that will help us focus research on real industry needs. The result will hopefully be a sustainable and healthy industry that is globally competitive, environmentally compatible, and accepted as a contributor to our economy and society."

Koleff predicts that the research priorities identified in Agenda 2020 will help the industry further reduce water usage and air emissions, and that this will boost the public's acceptance of the industry. The consumers of the future will demand nonpolluting, sustainable products, and Koleff believes that the industry can deliver.

Closset anticipates continued growth of printing and writing grades and further consolidation of the industry, with technology providing the competitive edge. "The difference separating winners from losers will be the adoption and utilization of innovative technologies and strategies. The technologies developed by Agenda 2020 will greatly contribute to the success of the companies that embrace them."

Thorp, who heads the Agenda 2020 committee on sensors and control, voiced his committee's specific predictions for his industry segment. If the research recommended by the sensor committee develops as expected, the mill of the future will have voice-actuated networks, self-calibrating sensors, and self-tuning loops with "real-time optimization of quality, inventory, and costs. Models will predict the best combinations of raw materials and process conditions to achieve specific product properties. Advanced systems might permit customers to select their own specifications."

TRACKING PROGRESS

Anyone who has tried to organize a lunch outing among colleagues knows that the difficulty of gathering everyone for a timely departure increases exponentially with the number of participants. In the same vein, the Weyerhaeuser group noted that "it is always difficult to get universities, suppliers, and manufacturers all together in one line. However, we haven't seen any other document or

tool in the last few decades that provides better alignment than what we have here."

Agenda 2020 is only two years old, so it was not surprising to learn that all of the respondents agree that it is on track. More important, the goals of this long-term program will be reviewed every three years and realigned if needed. Right now, everyone is optimistic because of the DOE's US\$ 5-million contribution to industry research. However, the Weyerhaeuser group cautions that "the critical thing is to not let it become bureaucratic. We must use Agenda 2020 to shape the debate and provide visionary guidance to the context of the debate while minimizing the bureaucratic role." Nicholson takes it a step further, stating that "the initial effort of Agenda 2020 has been in conjunction with DOE. Long term, Agenda 2020 must be more than that."

Thorp is more concerned with immediate research needs. "Agenda 2020 is ahead of where most thought it would be. The only obstacle is funding. We have more high-priority needs than we can fund."

GLOBALIZATION

With billions of dollars in imports and exports of pulp and paper in the United States alone, globalization is clearly upon us. Indeed, Nicholson observes that "the globalization of the forest products industry became a reality at least two decades ago." Closset opined that "globalization is driven by an irreversible trend toward international free trade," and he predicts that this trend will continue to accelerate.

All of the responding representatives from the working group emphasized the need for the U.S. industry to improve its position in overseas markets. "One of the main goals of Agenda 2020 is to help U.S. companies become global players," says Closset. "To stay competitive on a global basis, U.S. companies will need to become stronger technically. U.S. companies have been comfortable being number two in terms of adopting innovative processes. 'Never buy serial No. 1' is a common self-congratulatory statement. That attitude could become self-defeating in a fiercely competitive global arena, where prudent risk-taking will separate winners from losers. We're already at a disadvantage from the standpoint of fiber cost, so we need to compensate by implementing innovative, superior manufacturing technology that will allow us to be low-cost producers of value-added products."

Thorp sees the cost of fiber as one of three driving forces toward globalization. "First and most important, customer demands are changing. Many of our customers are going global, and they want to work with us on a global basis. Second, there is the issue of wood supply. The cost of wood from the Nordic countries and the

southern United States is expected to increase, while the cost of tropical hardwoods will continue to be low. Third, there can be an economy of scale. The paper industry is very fragmented, with the largest players having only about 7% market share on a worldwide basis."

The group from Weyerhaeuser emphasizes "the need to speak from a common basis as a North American industry. Without the unified vision that Agenda 2020 articulates, we would be much less effective in shaping the debate in a global context. We see an expansion of globalization—both in markets and in manufacturing. Today we are North American manufacturers but global marketers." That will change. As the industry continues to consolidate, they believe that tomorrow's large companies will become global manufacturers as well, with corporate ownership of raw materials and timber lands transcending national boundaries.

Closset also sees "industry consolidation continuing for those who strive to become large, financially strong global players. This will change the product development cycle. Global companies will be serving volatile global markets. The traditional evolutionary approach to product development will have to become more revolutionary. Global players will have to understand future market trends better than their competitors and have the flexibility to bring new products to market at lightning speed."

FIBER SUPPLY AND SUSTAINABLE PRODUCTION

All of the respondents agreed that fiber supply and pollution control are key challenges facing the industry. Energy consumption, water usage, waste management, and capital effectiveness were also high on the list.

The Weyerhaeuser group sees "global manufacturers looking to the Southern Hemisphere—the fast-growing regions of the world—for a large portion of their fiber supply. We simply must grow more fiber faster if we are to meet global demands."

Koleff acknowledges the importance of offshore fiber supplies while listing additional options: "improved genetic selection to increase forest yields, slow but steady growth in the use of nonwood fibers, development of offshore forest resources to replace land lost to government set-asides in the United States and, finally, improvements in process technology resulting in higher in-plant yield."

Closset sees "the global fiber-supply situation changing drastically in the next 10–15 years. Fiber shortages will constrain the growth of production capacity in North America. The explosive growth of pulp and paper manufacturing in regions such as Southeast Asia could lead to a global fiber shortage. Fiber will become a global commodity requiring new strategies. Regions producing tropical hardwoods, such as Brazil, could become the

world's new wood basket. The use of recycled fiber or nonwood fiber will become an economic issue instead of a political issue. Maximizing the use of recycled fiber will make good business sense. We probably will also see growth in the use of annual crop residuals—true residuals, not crops grown to provide papermaking fibers. Companies will need to secure low-cost, stable sources of fiber, both virgin and recycled, and maximize their use as well as that of equally scarce other raw materials. This will require strong competencies in the management of cultivated forests and sustained investment in forestry R&D."

Thorp echoed these themes, predicting that the U.S. industry "will continue to look at tropical hardwoods for future capacity increases. Brazil is one of many countries capable of responding to this need. Nonwood fibers from annual crops also present some unique opportunities in areas of the world where there is a shortage of wood fiber. One major obstacle is the vast harvesting and storage of fiber required to keep a mill running for a year."

The Weyerhaeuser group also sees a role for nonwood fibers in the future. "When the economics of nonwood fibers matches those of wood fibers, they will play a more important role. The issue around nonwood fibers is tied to annual crops, harvesting, and storage. With wood fibers, the inventory is in the forest, where it continues to grow until harvested." With annual crops, the inventory must be harvested over a short period and then stored for use throughout the year until the next harvest. Thorp concedes that "this is a substantial economic hurdle to the use of annual crops, but it is not insurmountable. Some mills are doing it."

SOCIETAL VALUES AND THE ENVIRONMENT

The consensus of the respondents was that environmental regulations will become increasingly stringent over the next 25 years, especially in the developed nations. Koleff notes that "continuing environmental improvements are a fact of life. However, a big impediment to further progress is the lack of trust by the regulatory agencies. The difficulties experienced by companies participating in EPA's Project XL illustrate this problem. In most cases, EPA's reluctance to change its historical command-and-control posture has delayed the development and implementation of pollution-prevention efforts. In some cases, projects have been dropped altogether."

The Weyerhaeuser group believes that "market factors will continue to be the dominant force, but societal values will play a major role, and their influence will likely increase. However, products from wood may well emerge as the only products that are derived from truly renewable sources. As such, they may become the products of choice for people with high societal values who also seek

a high standard of living." With the increasing importance of societal values on product development, they stress the need to "pay attention to all of our stakeholders—customers, communities where we do business, our own employees, and certainly the investors—because we are not going to be doing this alone."

Closset asserts that "changing societal values will play a very strong role in driving change, as people's habits and values will be different 10–15 years from now. Environmental issues will continue to weigh heavily on the industry, particularly in developed countries. Regulations will continue to drive upward the cost of doing business. In developing countries, the emphasis will be on preserving native forests, but regulations will remain second to economic growth."

Thorpe acknowledges the power of public opinion as a market force. As a practical matter, he believes that the industry "must manage our facilities and our water and fiber resources with the degree of environmental stewardship required by the public." He cites five principles outlined by James Melican of International Paper.

1. Continually improve our performance in sustainable forestry and in our manufacturing processes as we strive toward a goal of minimal to no impact on the environment.
2. Share with the public, and the news media, our actions toward those goals by welcoming visitors into our forests, mills, and plants to meet our people, observe our practices, and decide for themselves whether we are good neighbors and worthy of their trust.
3. Establish partnerships with mainstream environmentalists, elected officials, and regulators with whom we share the goal of protecting the environment.
4. Work together as an industry to resolve internal differences and address common issues that are of concern to the public.
5. Participate aggressively in the public policy arena.

TECHNOLOGY AND THE BUSINESS CYCLE

Some might argue that the business cycle is grounded more in sociology than technology. No one would deny that it is a confounding topic. Erickson, McCullough, and Raymond of Weyerhaeuser state the issue succinctly: "It is unlikely that anyone can understand all the forces and dynamics that impact the cyclical nature of our industry." They venture that "because we are predominantly a commodity-related industry and are very fragmented, we basically force these cycles to happen. There is nothing

in the near future that will overcome that cyclicity in a society such as ours. Agenda 2020 may help in the long run by evolving technologies that are capable of more closely aligning our raw material supply with our conversion technologies or vice versa. For example, a trend toward smaller and more specialized manufacturing facilities might tend to smooth cycles in some markets."

Koleff also recognizes the possibility of smoothing out the cycle by aligning production capacity more closely with consumer demand. "Agenda 2020 is the kind of focused effort that could result in technologies that improve capital effectiveness." If the research objectives pan out, "large increases in production capacity may no longer necessarily be the most cost-effective approach." The ability to add incremental production capacity or to build mills on a smaller scale would help the industry by "rationalizing capacity growth to market needs."

Closset shares the view that better control of production capacity would be a boon to the industry. "One way of overcoming the industry's business cycle would be to increase production capacity in a more measured way than we do today, matching market demand more closely with market need. The minimill may be a concept worth exploring further. The ability to bring incremental capacity on stream at lower cost may become a necessity, as it is becoming more difficult to recoup the cost of investment in new capacity, particularly as the down part of the cycle seems to lengthen. With product life cycle getting shorter, it may make sense to build low-cost mills that are not expected to last as long as current mills."

The challenges, Closset concedes, are substantial. "Development efforts will require 'outside the box' thinking by equipment vendors and competent, creative design engineering. Pulp and paper companies will have to be willing to take risks, both technical and financial, by investing in R&D."

Because the risks are so high, Closset foresees an increase in the number of strategic alliances between equipment vendors and pulp and paper manufacturers. However, he cautions that "the scope of a pulp and paper manufacturer's needs and strategic objectives will need to be thoroughly understood and internalized by those equipment and materials suppliers willing to make a commitment to fulfilling them. This level of commitment can only take place within the context of a close, long-term relationship that helps all of the parties throughout the business cycle." **TJ**

Burke is a freelance writer specializing in the pulp and paper industry, 1011 Larch Ave., Takoma Park, MD 20912-6520; DougBurke1@aol.com.