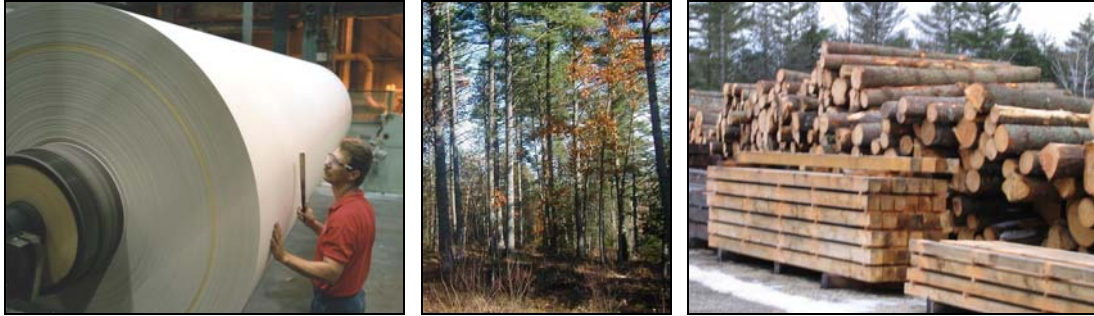


**ESSAYS ON MAINE'S FOREST PRODUCTS INDUSTRY AND IT'S
PLACE IN THE GLOBAL MARKETPLACE**
MAINE FUTURE FOREST ECONOMY PROJECT



**CURRENT CONDITIONS AND FACTORS INFLUENCING THE
FUTURE OF MAINE'S FOREST PRODUCTS INDUSTRY**

MARCH 2005

PREPARED FOR:

**DEPARTMENT OF CONSERVATION – MAINE FOREST SERVICE
AND
MAINE TECHNOLOGY INSTITUTE**



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Appendix B

**ESSAYS ON MAINE’S FOREST PRODUCTS INDUSTRY AND
IT’S PLACE IN THE GLOBAL MARKETPLACE**

**ESSAYS BY LLOYD IRLAND AND JIM BOWYER
REACTIONS BY LLOYD IRLAND, JIM BOWYER AND AL SCHULER**



Essays on Maine's Forest Products Industry and It's Place in the Global Marketplace

As part of the Maine Future Forest Economy Project and at the request of the Maine Forest Service - Department of Conservation, Innovative Natural Resource Solutions LLC (INRS) solicited essays from leading thinkers in the forest products industry on Maine's future role in a globally competitive industry. Specifically, authors were asked to address four questions:

1. What are the major forces currently influencing the global forest products industry and investments in new mills or upgrades to existing mills?
2. What are the emerging factors that are not apparent now, but will be in the future?
3. What will Maine's niche in the global forest products industry be in the future in light of these forces?
4. How can the forest products industry in Maine, and Maine government, best leverage Maine's unique niche to maximize value and "staying power" in both the near- and long-term?

Authors were asked to provide a high-level perspective and creative thinking, not necessarily new research. Following completion of these papers, each author was asked to pen a brief reaction to the other paper. These essays add an outside perspective to the Maine Future Forest Economy Project.

The valuable perspectives provided in this section are the opinions of the authors, and do not necessarily represent the opinion or perspective of Innovative Natural Resource Solutions LLC, the Maine Department of Conservation, or the Maine Technology Institute.

Authors who provided essays as part of this effort are:

- **Lloyd C. Irland**, President of The Irland Group. Well known to forest industry and government in Maine, Lloyd Irland has served Maine in a variety of capacities. A forester who served as both the Director of Public Lands and as State Economist, Irland has unique perspective on Maine's forest industry. Since 1987, Irland has served as a consultant working on forest industry issues for industry, trade associations, government and conservation organizations. He is presently serving as a Lecturer and Senior Research Scientist at the Yale School of Forestry & Environmental Studies.
- **Dr. Jim Bowyer** is a professor (part time) within the University of Minnesota's Department of Bio-based Products. He is an elected fellow of the International Academy of Wood Science, chairman of the Tropical Forest Foundation, chairman of the Minnesota Bio-fiber Council, a scientific advisor to the Temperate Forest Foundation, and an associate in Dovetail Partners, Inc. – a business-oriented environmental consulting firm. Bowyer has served as president of the Forest Products Society (1993-94) and of the Society of Wood Science and



Technology (1987-88), and as Vice President of the Consortium for Research on Renewable Industrial Materials (1992-2003). He was head of the University of Minnesota's Department of Wood & Paper Science from 1984 to 1994, and founder and director of the Forest Products Management Development Institute at the University of Minnesota (an organization dedicated to education and development of industry professionals) from 1994-2003. Bowyer served as project leader of the Minnesota Agricultural Experiment Station project "Environmental Life Cycle Assessment of Bio-Based Materials and Products" from 1988 to 2003, and led a research team focused on global raw material consumption and supply trends over a 30-year period.

In addition to these authors, Al Schuler of the USDA Forest Service was asked to provide a reaction to these essays.

- **Al Schuler** is a Research Economist with the USDA Forest Service. In this capacity, he is responsible for assessing the demand/supply situation for solid wood products and estimating the demand for engineered wood products (EWP). He also assesses the links between the softwood and hardwood forest products industry. Prior to joining the USDA Forest Service in 1999, Schuler was the Manager of Economics and Market Planning for Norbord Industries. There he developed Norbord's economic outlook (demand/supply analysis, timber supply assessment and price forecasting), provided forecasting services and supported the development of Norbord's overall business and market planning activities, which included strategic planning initiatives. Schuler's experience includes working as the Manager of Market Research for Forintek Canada Corporation, Research Economist for the U.S. Forest Service, as an Inventory Forester for the Washington State Department of Natural Resources.



**Maine's Future Forest Economy:
Driving Forces, Niches, and Private/Government Priority Actions**

By

Lloyd C. Irland*

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This paper offers an overview of major current and emerging driving forces affecting the Maine forest industry sector. It seems useful to separate emerging forces into two future time windows: near term (5-10 years) and long-term (20-30 years). Next, I identify some niches that appear to hold promise for Maine producers. Finally, I suggest some areas of public and private initiative that would assist the Maine industry in adapting to challenges and seizing opportunities.

This paper is an essay stating points in highly compact and conclusory terms. To explain causes fully, document them with charts, and discuss varying views on all these topics is beyond the scope of this work.

A number of important cyclical uncertainties, such as the outlook for the housing bubble, the near-term GDP and housing outlook, and the likelihood of another Asia Flu outbreak, are beyond my expertise and cannot in any case be fully treated in this short essay.

We open with some facts that illustrate the challenges being faced by the entire North American forest-based industry:

- The largest single line hardwood pulp mill in the world will soon be commissioned in Brazil by Veracel.
- No greenfield paper mill has been built in the US since the late 1980's.
- No greenfield mill has been built in Maine since SD Warren commissioned Somerset, in about 1980.
- No new paper machine has been built in Maine since the mid 1980's (also at Somerset)
- One of the largest Uncoated Free Sheet machines in the world is to begin operation in 2005 – in China.
- There are orders for specialized paper grades going to Europe because no US mill will (or can) make the product.



- The largest sawmill in North America is at Houston, BC, sawing 600 million board feet (MMbf) per year. Others in North America approach 400-500 MMbf per year. Large mills in Europe exceed 400 MMbf.
- The Houston mill's annual output is huge -- two such mills could theoretically produce Maine's entire annual production of lumber.
- I can't remember the last greenfield softwood sawmill built in Maine. (Can you?)
- The US is buying 900 MMbf of softwood, mostly construction grades, from Europe and Scandinavia (Ireland, 2004). This is about equal to Maine's total spruce-fir lumber output. Quality is a key reason. The exchange rate is significant, but how much this trade flow will be affected by a weaker dollar is uncertain.
- New OSB plants are running 600 million sq ft and more per year. The Maine mills are in the 300 MM sq ft range and were built in the original wave of OSB plants in the North.

A. Current Driving Forces

MACRO ECONOMIC FACTORS

Four macro variables have been at work. They have been cutting in different ways. As always, their near-term course is uncertain.

GDP growth has fallen into a mild recession, and the recent "recovery" has been moderated by continued weakness in manufacturing, so that it has been termed a "jobless recovery". Strong GDP growth has been related to, and potentially benefiting from, a historic housing construction boom. This has been accompanied by substantial inflation in house prices relative to incomes. The role of historically low interest rates in promoting this boom has probably been exaggerated. Strong housing construction has maintained softwood lumber production at all time highs, yet at times prices have been very low despite such high consumption levels. Currently, short interest term rates stand at unsustainably low levels, seemingly defying gravity. The realities of terrifying fiscal and trade deficits will begin to come to bear on interest rates and on GDP, perhaps sooner than later. Finally, the US dollar exchange rate in recent years has probably been responsible for much of the stress on US manufacturing, though certainly not all of it. How recent improvements in exchange rate conditions may moderate these impacts on the lumber and paper business remains uncertain. More importantly, whether the twin deficits can persist without major effects on the exchange rate for the dollar remains to be seen.



PAPER DOWNCYCLE

The North American paper industry has experienced a downcycle of unprecedented severity and duration. The response has been, in contrast to previous cycles, a major episode of consolidation, machine and mill closures, and restructuring. Losses in jobs and production, and increases in import market share have been continuous and demoralizing. The causes are numerous. They include aging mills, adverse exchange rates, and continued improvements in quality and cost competitiveness by offshore competitors. The natural maturing of US paper markets seems, perhaps understandably, to have caught industry managers off guard. From 1965 to 1992, US paper and board production doubled (Howard, 2003, p. 72), and then increased by another 14 million tons a year to reach its 1999 all time peak

Pulpwood usage in the U.S. fell by about 10% from 1994 to the year 2000 (including chips and residues). The U.S. Forest Service (USFS) predicts a further decline, and then a recovery, but the 1994 level will not be reached again until 2020. (Haynes, GTR 560, p. 76)

Rising imports have placed the paper industry in Maine as well as other regions that produce printing and writing (P&W) grades under severe stress. The USFS is predicting that imports to the US market will rise over the long term, doubling from 2000 to 2050, based largely on low cost supplies of tropical fiber. (GTR 560 p. 76)

LUMBER/PANELS UPCYCLE

Strong housing starts and resales have led to record softwood lumber consumption. Following the imposition of the countervail and antidumping duties and then a year or more of depressed prices, lumber markets recovered and prices returned to historic highs. Ordinarily this volatility would be bad news for lumber's long-term prospects. But by coincidence, steel prices were high during the same period. The OSB industry saw continued strong demand, and despite strong capacity increases, prices hit all time historic highs over the past year. It is possible that OSB producers are gaining an ability to price more effectively against softwood plywood sheathing grades instead of taking heavy discounts. (From an engineering standpoint the products are identical.)

SCALE ECONOMIES HAVE BEEN PERMANENTLY LOST

Across the board in Maine wood processing industries, solid and paper, scale economies have been permanently lost, with only minor exceptions. Elsewhere in North America, and offshore more notably, large scale mills are being built that will cumulatively tilt continental and global cost advantages away from Maine. This, combined with the age of the capital stock, means a steady erosion of competitiveness, especially in high volume products. Further, the move toward commodities of the leading printing and writing grades is nearly accomplished. There are no high profit niches for machines to flee to.



MAINE FIBER SUPPLIES – TIGHTER THAN WE THOUGHT

Despite capacity closures in Maine, wood fiber demand has remained strong. Yet, the ability of the resource and the logging sector to meet current needs is uncertain. The Daaquam mill proposal for Costigan is said to be indefinitely postponed. It is hard to believe that log supply is not involved, even though just a few years ago two smaller mills were operating in that area. More seriously, the restart of No. 11 at Millinocket has depended on bringing in pulp from Port Cartier, Quebec, on the north shore of the St. Lawrence. This is likely a transitional move, but it speaks loudly to the fiber supply situation in that part of Maine.

Mill restarts at Lincoln, Millinocket, East Millinocket, and Berlin/Gorham (NH) have occurred at times of tightening supply due to weather and restructuring in the logging sector. The result: delivered wood and chip prices have reached all time high levels that are likely unsustainable for any period of time.

Extremely tight fiber supplies are good for landowners and logging operators, but they deplete mill working capital and place Maine mills at an additional disadvantage for modernization investments. Evidence of difficulty in filling current wood needs renders capacity expansions less and less likely.

CORPORATE SECTOR REMAINS UNDER STRESS NATIONALLY

Despite improvements in 2003, return on capital employed for most major forest products manufacturing corporations with operations in Maine remains well below the cost of capital. Although there were mergers totalling \$70 billion in assets in 2002 and 2003, consolidation and related rationalizations have not fully addressed this problem (PWC, 2004).

Strong wood products earnings have been helpful to earnings results of the integrated companies. Still, many of the biggest companies are trying to exit solid wood products manufacturing:

- Potlatch has sold its 3 Minnesota OSB mills to Ainsworth.
- Georgia Pacific is now virtually out of hardwood lumber, and has sold its distribution business.
- Louisiana Pacific announced intentions to sell all its stud mills and has sold several.
- Weyerhaeuser has sold board plants in Pennsylvania.
- Most dramatically, Boise sold off its entire wood products and paper business to re-focus on distribution following its Office Max acquisition (Wall Street loved it).
- International Paper has closed sawmills and recently sold off its recently acquired Weldwood business in Canada.



HARDWOOD LUMBER – IS THE WORST OVER?

Nationally, hardwood lumber experienced a severe contraction after 1999, with some estimates placing lost output at 30%. Others say the loss was less severe. There is a sense that a modest recovery is occurring. But major markets for hardwood have suffered permanent damage. The shrinkage of US manufacturing is reducing demand for pallets; higher imports of furniture are reducing sales to the furniture market. Markets are shrinking at both ends of the grade spectrum.

LOGGING/ HAULING SECTOR – BENDING BUT NOT BREAKING?

There is no need to belabor the challenges facing the logging sector. The sector is at a point where predictions are essentially impossible. But at a minimum, the marketplace seems to be telling us that sustaining current delivery volumes can only be done at delivered wood costs that are much higher than those prevailing just a few years ago. The implications for the very survival of at least some mills are serious.

Bottom Line: We are dealing with a complex industry enduring unprecedented stresses, and undergoing severe re-adjustments in response to them. These conditions make forecasting the future in any detail extremely difficult. The driving forces are national and global, not just local to Maine.

B. Emerging Forces

Short Term, 5-10 years: “The Dark Times”

CANADIAN LUMBER

In the near term, Canadian softwood lumber will remain a major factor in the North American market. Experience has shown that we have been unable to devise protectionist arrangements that can produce more benefits than their costs to the US industry and its customers. Anyone supposing that some real solution will be found that can yield sustainable prosperity for US lumber mills has not paid much attention to the actual experience of the past 20 years.

CHINA – IMPORTS TO US WILL INCREASE

China’s economy is growing rapidly. Dollars brought in by exports are a principal factor. A huge workforce of hardworking people, virtual armies of resourceful entrepreneurs, and growing sophistication in manufacturing and distribution are potent economic realities. The growth in China’s wood based industry is so rapid that the country is also quickly developing a low-cost wood machinery industry. In 5 to 10 years, Chinese producers will increasingly dominate the machinery sector. As its paper industry grows, China will develop a domestic paper machinery supply industry as well. Having a growing machinery sector will become an enduring source of competitive



advantage for Chinese producers. (Note: The US paper machinery sector is slowly dying as it has no domestic customers for new mills)

HARDWOOD PULP: HEADING FOR EXTINCTION IN NORTHEAST NORTH AMERICA

By end of this near-term period no one will be able to afford to make hardwood pulp in this region. The region's dependence on hardwood fiber is no longer an advantage. On a delivered basis the fiber is no longer cheap. Offshore sources are low in cost and production is growing rapidly. Their quality is high. Shrinkage at Old Town and Woodland are symptoms. The current troubles at Ste. Anne Nackawick reflect the same situation.

Hardwood pulp mills, integrated or otherwise, that do not find a sustainable business model will close permanently, more likely sooner than later.

Bottom Line: Maine's ability to compete in high volume products, whether traditional "commodities", or more highly processed "value added" items, is eroding fast. Maine's ability to attract capital to rectify the situation is declining



Longterm, 20-30 years: Potential resurgence

US POPULATION GROWTH PRESSES AGAINST SUPPLY

The USFS Outlook expects US population to grow from 273 million in 1999 to 347 million by 2030 (Haynes, 2003). Allowing for the uncertain nature of population projections, these would seem reliable since much of the growth is from immigration and not solely a function of the reproductive behavior of current US residents. Even if average incomes do not rise as much as projected, a 27% increase in the number of consumers is bound to have potent implications for wood products consumption.

CANADA TIMBER PRODUCTION DECLINES

The peaking of Canadian production has been announced several times in recent decades, each time, in retrospect, prematurely. Yet the pressures are inexorable. The long-term outcome will probably be a decline in log harvest and end product output. This will occur at different rates in different regions. The high costs of intensive management to offset reduced availability of natural forest will be felt over time. Governments will become increasingly reluctant to make these investments. The basic production economics are marginal for many of these investments. Governments will be less and less likely to justify them based on short-term employment needs or long-term sustainability of industry. This is already evident in New Brunswick (negative reaction to recommendations made by the consulting firm Jaako Poyry), and is expected to result in significant cuts in harvest levels in Quebec in the near term (current re-evaluations of annual allowable cut; no-herbicide policy).

THIRD WORLD GROWTH

Beyond 20-30 years, we may hope that rising prosperity of middle class consumers in India, China, and Brazil will result in those nations actually absorbing more of the output of their economies and becoming less dependent on exports as a driver of growth. In 2034, these nations will not be second or first world in terms of per capita incomes, but nonetheless they will be home to large and growing middle classes. Home Depot and others plan to be in a position to benefit from this and if successful, there will probably be more Home Depots in China than in the US. Larger homes with western-style furnishings will be important to this generation of consumers. We can expect Chinese consumers to more fully employ the Chinese furniture industry.

India and China will likely import considerably more wood than they do now. Over time this will play an important role in re-balancing world wood markets as the wave of tropical plantation harvests begins to peak.

RUSSIA

Russian timber production appears to be increasing, following a dramatic collapse as the state-controlled economy of the Soviet era unraveled. Given the business realities,



distances, and costs involved, a major role for Russian wood on the world stage seems unlikely, even thirty years out. If the Russian economy can improve its performance and begin providing improved living standards to its citizens, wood will be used domestically. Remote Siberian wood, that could not reach western markets anyway, will be shipped to China.

The Russian mafia already poses a significant barrier to international investment. The stranglehold on the economy by the mafia in the ports and at the local level, and the big kleptocrats at the national level, challenge the rule of law in a fundamental way. The odds of them voluntarily relinquishing their power seem remote. Bottom line: I don't see Russia as an international factor of any importance in coming decades.

THE GLOBAL PLANTATION PRODUCTION WAVE PEAKS

Established plantations in the tropics and subtropics now total more than 60 million hectares. They are already providing a growing supply base for new industries in these regions, as well as for log and chip exports. Plantation harvests will rise even if no new ones are established, due to their age structure. (Sedjo, 2003). In the long-term, competing land uses, potential second rotation decline on some soils, institutional instabilities, emerging insect and disease issues, and the filling up of low cost planting opportunities are likely to cause the total output to reach a plateau. The timing and pattern of this plateau will vary regionally, and surely cannot be foreseen with any precision. The plateau could occur beyond the 30-year time horizon of this analysis.

SPRAWL

A major negative factor in this time window is that the cumulative effects of sprawl across southern and central Maine will have had time to cause major reductions in wood availability. Evan Richert (2003, p. 216-224) estimates that half the towns in the southern seven counties have already reached "suburban" population densities. He projects that by 2020 the number of remaining rural towns could be cut in half once again. Research elsewhere (see Irland Group, 2003, chs. 7-9) has shown that population density and land use change can dramatically affect wood availability.

Considering all the factors involved, the chances that this can be ameliorated by public policy are virtually nil.

Bottom Line: Beyond 20-30 years, the indications are that a new period of improved demand and potential competitiveness for Maine wood and wood industry will come into view.



Maine's Niche

These strategic factors yield some ideas about the kinds of market options that have better survival potential for Maine than others.

CERTIFIED MARKETS AND GREEN BUILDING MATERIALS

With its large base of certified land, Maine has a strong interest in boosting market presence for labeled wood products. Experience indicates, however, how very difficult it is to achieve this.

Certification is not a slam-dunk. The Forest Stewardship Council (FSC) process continues to evolve. Maine already lost a significant piece of FSC land due to internal political problems within FSC that did not even occur within the US. Retention of the remaining FSC base is not a certainty. Certain internal FSC issues must show progress. Some market signs need to appear that offer at least symbolic recognition of FSC landowners' achievements.

Customized business plans need to be built for how state government, working with others, can use its capacity providing for information and education to:

- Help small firms enter the certified marketplace; and
- Educate consumers to promote the products.

Relying on large retailers, or national campaigns run by FSC promoters has not worked in the past and will not work in the future.

Unfortunately, the certified market is small at the retail and end user level. Many other landowners are trying to move into it, including the state lands in Minnesota, Wisconsin, and Michigan. Maine's current advantage of having a large area of certified forestland may prove to be temporary.

All the same, building on this opportunity is likely to be a useful part of business strategy for some firms, especially smaller ones serving niche markets. Certification will not protect large commodity producers, however, from aging mills, the logging sector's problems, world competition, and the tight fiber supply situation.

NEW LEVELS OF SERVICE

Anyone who has tried to buy upholstered furniture knows what poor service can be like. US producers, if they can improve service, have a chance to meet lower cost import competition. This concept of service needs to be applied throughout Maine industry. Best practice firms are already doing it, not only in furniture, but in many other fields and at all levels of the market. Rebuilding businesses to emphasize service will be critical.

Merely doing "value added" by further processing will fail. Maine cannot compete simply by adding processing steps to high cost raw materials using high cost labor and



energy, in a location at the corner of a continent at that. We need ideas for profit adding, not value adding. Value adding by improving service, however, probably has a future. Numerous examples, applied to furniture, are offered by Schuler and Buehlmann (2003).

REPROCESSOR OF IMPORTED HARDWOOD PULP & RECYCLED FIBER

The large supply expansion potential of low cost hardwood fiber in the tropics and subtropics demands a response in the US paper industry. It will take the form of US mills becoming ever more adept as re-processors of this fiber into the products North American customers want. This may fit well with business strategies of at least some tropical producers. Procter and Gamble, at Mehoopany PA, has closed its pulp operations that relied on high cost, long haul fiber from a fairly low-end mix of sources. It has expanded its tissue production using imported eucalyptus pulp, and this at a location some distance inland from saltwater. Simply duplicating this in Maine for tissue will probably not work, but the general concept needs to be considered.

PAPER: INVENT THE NEXT GENERATION OF SPECIALTIES

As the paper industry in the South grew after the 1940's, new, low cost mills pushed Northeastern mills out of packaging and newsprint grades, the very grades that built the Maine paper industry. The last newsprint machine was closed in 2001. The Maine industry naturally transitioned into higher technology papers, serving growing printing and writing markets with progressively more complex and demanding product traits. Some mills maintained substantial R&D staff onsite to meet customer needs. Such grades often used older, slower machines that were economical for short runs. In other grades, large new machines were built. In any event, the industry rebuilt itself over decades to meet new needs for which its fiber, energy situation, and mills were suited. Thirty to forty smaller mills did not survive this transition.

A new family of specialties with broad markets needs to be invented. This will be more difficult as it is not easy to see options with the necessary market size. Also, the technical capabilities have likely been depleted and we don't have 30-40 years to make this transition as we did the transition from commodity grades to printing and writing grades.

With the strength Maine has in its mills, supplier industries, and the University's paper technology program, there ought to be a way to mobilize these capabilities more effectively to retain existing jobs and bring new ideas into the marketplace.

DISTRIBUTORS/REPROCESSORS OF IMPORTED SOLID WOOD AND WOOD PARTS/COMPONENTS

A tidal wave of offshore wood, some of it of very high quality, is a reality. The height of this wave will only increase. The trick will be to turn this to advantage. I am acquainted with one individual who symbolizes what I mean. He formerly served a sales manager for a large white pine mill, and is now importing radiata pine for various kinds of lawn



and garden uses. There are other examples. People have seen the handwriting on the wall, have read the message, and are adapting.

BUILD ON DEVELOPMENTS AT AEWFC CENTER AT ORONO

The technical capacity of the University for analyzing emerging forms of wood composites, as well as for traditional products, has been an underutilized resource. Experience shows that we are not very good at bringing laboratory innovations into commercial practice. We need to learn how to select new ideas better, and get them into the marketplace faster and more effectively. One clue might be that starting new companies to commercialize innovative products is very risky.

There are firms that are not interested in new products, new technologies, new machines, and new management methods. Forget about them. They will be gone by 2010.

A NEW FUTURE FOR WOOD BASED ENERGY & CHEMICALS?

I have no more clairvoyance than anyone else and do not know if the current high oil market will prove to be a new and permanent plateau of prices, or yet another brief spike followed by plunging prices. Yet the irony of the situation must be obvious. Shortsighted and foolish legislation and regulation have pushed us to delete wood-fired electric capacity, in the name of saving money for consumers. We've deregulated ourselves out of generating capacity that is now needed by consumers and, more importantly, by the state's wood industry.

The people who created this situation are clearly not the ones to fix it (surely they will all blame someone else). I don't know what to recommend now. But if we can find a new and more stable future for wood-based energy, it might represent one of the few (nay, very few) places where sound public policy could make a significant difference.

There has been a good deal of discussion on making chemicals out of wood. A meeting last spring at the University reviewed a number of interesting new developments and emerging ideas. The current discussion includes a good deal of wishful thinking and ignoring inconvenient realities. Yet, there may be something here. We should be watching.

Bottom Line: Acknowledge that we still need major changes. Big new ideas will be needed and it is not clear where they will come from. Time is not on our side. Adjustment options are more realistic, and success more likely, for smaller, more nimble companies with strong marketing cultures.
Problem: The focus needs to be on small/medium business sector, as large corporations are not well suited to the kinds of business innovations required.



D. Industry/Government Priority Actions

RECOGNIZE MATURITY OF SECTOR

It is important that government acknowledge the fact that we are dealing with mature (indeed, in some senses over-mature) industries.²⁴⁴ Their capital stock is increasingly ancient and growing more outmoded every day. Criticizing management for this does no good, because no rational individual could possibly build new greenfield paper capacity in the US today and hope that it would ever pay out.

Trade policy has made a thorough hash of the softwood lumber situation. A brief period of quotas on imported clothespins expired after providing temporary relief. The US industry then disappeared. Efforts to protect the US furniture industry from a surge of Chinese imports are now under way, with uncertain prospects for success.

Trade policy cannot help us in the long run, though it may be helpful for periods of transition. This observation does not tell us what to do, but it helps tell us what *not* to do. Facing the facts has to be the first step.

RETAIN WORKING FOREST

The wood supply base is fragile. There is no room for unnecessary deletions. That said, I think there will be more confidence in future intensive management if we can complete the minimal system of representative reserves that has been advocated by Mac Hunter, Janet McMahon, and others over recent decades.

Working forest conservation easements remain the best tool in sight for immunizing the private forest base against subdividing and removal from availability for wood supply as well as recreation. Assuming a sprawl of tiny lots and gravel roads can be prevented, subdivision of huge properties into merely large ones, owned by various kinds of investors, need not be a threatening trend.

We can assume the reserve system on the Public Lands is largely complete and we should press for continued responsible timber management on the state's lands as well as on the nearby White Mountain National Forest, a small part of which rests in Maine.

SUPPORT – MORAL AND REAL – FOR INTENSIVE MANAGEMENT

The changes in forest landownership have reduced the average size of holdings, and in at least some instances have placed lands in the hands of investors who are unlikely to invest in intensive management practices. At the same time, some owners previously considered unlikely to invest in timber growing are doing so. Analysts over the years have argued that better management practices, including intensive practices, are badly

²⁴⁴ By overmature, I mean that, in my opinion, US paper consumption on a per capita basis is much higher than is sustainable in the long-term. It will decline. The USFS projects it to increase by 2050. This is too optimistic.



needed. A major area for improvement is in developing implementable prescriptions that both boost production and quality at the same time as being more biodiversity –friendly.

State government must continue to encourage such practices and oppose placing unnecessary obstacles in the way of such investments. Selective use of some of these practices on state lands should be considered in suitable situations.

MARKET FORCES COULD PREVENT FOREST FROM REBOUNDED

The extreme fiber demand/supply pressures noted above could lead to a terrible tragedy. There may be no way to prevent the rebound of the forest now appearing in the statistics from being nipped in the bud a year at a time, a stand at a time, as trees continue to be cut prematurely, before reaching their best value growth potential. If this occurs, a good deal of the benefit from past intensive investments will be lost.

There are no obvious policy instruments to prevent this from happening, but we can keep track if and when it does. There has never been a time when current monitoring of forest and industry conditions is more important. The forthcoming Five Year Report (in draft now) incorporates major improvements over previous resource analysis. It demonstrates why it is critical to stay on track with the Annual program.

LOGGING SECTOR – H2B

The federally created, though accidental, ban of the bonded loggers this year is a horror story of colossal proportions. This has stricken at the very basis of the industry – its wood supply. The effective abolition of the H2 B program (a federal program that allows workers in from other countries) was a policy decision taken literally for no reason at all – it was a complete accident. No amount of soothing rhetoric, business financial aids, training programs, or conventional economic development programs can compensate for the blow to the business environment that this represents.

It is not a question of how much of the planned cut could be found without those workers -- clearly a lot of it has been. But, the costs of doing so are unsustainable. Maine's policy climate has suffered a severe blow.

Despite intense effort on this issue, there are few new ideas at hand about how to improve this situation. There are plenty of ideas that will make it worse.

CERTIFICATION & GREEN BUILDING

Those of us who have participated in and advocated environmental certification have to admit that it has been a lot harder than we thought to bring certified wood products to consumers and create true market-driven demand “pull-through” that will benefit producers and generate even token green premiums. Even getting boards to the store shelf with a label, without a premium, has largely eluded us so far.



Yet, certification and Green Building are some of the few new ideas out there that offer some hope for improved business, especially for smaller mills and value added operations. Some of the efforts to promote certification have been more driven by egos than economics, by ideology and knee-jerk polarization than by sound business ideas. It will be necessary to ignore the snake oil being pushed out there.

There are ideas on the table, among other places, in the Saxl Commission report. We don't need more committees. We just need to get to work in a street-smart, results oriented, ground-level way.

STATE PURCHASING

State government ought to have a purchasing program that offers suitable encouragement to producers of *all* green products, especially certified ones. This should be a considered policy, as suggested in the Saxl Committee report, and not a hasty and oversimplified one, or serial capitulations to the latest “embargo of the week “ being pushed by some advocacy group. A sound purchasing policy by the state would then supply a base that could be cloned by other institutions in Maine.

An annual Green Purchasing conference, similar to one held a few years ago at College of the Atlantic, would provide a forum for sharing ideas and promoting the concept.

RE-WORK THE WOOD ENERGY SECTOR

Enough has been said above. This is important for a number of reasons.

SURVIVE TILL LONG-TERM GETS HERE & FOREST HAS REBOUNDED

Maine is in a position where it has little maneuvering room and few choices. Maine governments will have to continue responding to crises as they arise, to enable particular mills to survive a bit longer.

A number of weak spots in the State's business climate for capital intensive industry have been recognized for some time. These will have to be managed. For example, backsliding on workers' compensation must be avoided.

This will not go down well with some people, but perhaps we will have to wait another few years or so to reach dissolved oxygen standards (or other environmental standards) in a few places. This does not seem too great a sacrifice in view of what is at stake. There is an idea that just because the owners of some of the mills are multinationals that they can and will keep paying and paying and paying to address every newly discovered problem. It's not so.

Under a dark view of the outlook, there may be no program at all that can sustain the industry in anything like its present form. But it is clear to me that a great way to make



that dark scenario come true is to look the other way and pretend that these larger policy issues really don't matter. False optimism is our worst enemy.

Bottom Line: We have a duty to push as hard as we can to sustain the forest and the industry and to help new ideas emerge. We will have to take extra care to deflect folly and wishful thinking and stay focused. There are no guarantees.

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Jim Bowyer Comments Regarding the Lloyd Irland Paper

These comments are written following several readings of the October 26, 2004 paper “Maine’s Future Forest Economy: Driving Forces, Niches, and Private/Government Priority Actions” by Lloyd Irland.

I should first note that I have great respect for Lloyd Irland’s views on a wide spectrum of issues, having followed his work for over two decades. The fact that he has a long and continuing history of experience in Maine adds to his credibility in this project.

I do not disagree with much of what Lloyd has said in his report. Indeed, our two reports highlight many of the same issues and present similar views of global trends and what they might mean for the forest products industry within Maine. There are, however, a few areas in which we see things a bit differently:

- A rather dire situation regarding wood availability and costs is described and one suggestion focuses on government encouragement of more intensive forest management. On the other hand, the likelihood of reduced wood demand due to structural problems in the paper industry and competition from fast-growing plantations abroad are highlighted.

It is perhaps worth noting that the closure of just one or two of the state’s paper mills, a development that appears likely, could have the effect of both increasing wood availability for remaining enterprises and lowering wood prices. The same result could be realized if significant volumes of plantation-grown fiber were to find its way into one or more of the state’s paper mills as a substitute for locally-grown wood fiber.

In any event, given growing availability globally of low-cost fiber it may be a tough sell to convince landowners to invest in intensive forest management. While it may be a politically unpopular strategy, a policy of allowing market forces to push the least competitive mills to failure, followed by aggressive action once the least competitive 20 percent or so (as defined by wood consumption) have thrown in the towel may be worth considering.

- It is stated that China and India will likely import considerably more wood than they do now and that over time this will play an important role in re-balancing world wood markets as the wave of tropical plantation harvests begin to peak. A similar reference is made later to a plateau in plantation output.

My only comment here is that plantation establishment globally continues to proceed at a rate of about 12-13 million acres annually and that no peak in plantation establishment or in wood production from plantations is yet evident. In my view it is equally possible that plantation output will increase, rather than decrease, in the future.

- It is stated that a major role for Russia’s forest and wood products sector on the world stage seems unlikely, even thirty years out.



Irland may well be correct, but I see it differently. Today, investment dollars are literally pouring into Russia from both the West (western Europe and North America) and from the East (from China, Japan, and South Korea). The primary focus is on development of products (including logs, and a number of primary and secondary products) for export. My guess is that developments in Russia's forest and wood products sector will begin to noticeably impact this sector globally within a decade or so.

- I am in total agreement with the statement to the effect that beyond 20 to 30 years a new period of improved demand for wood products will come into view.
- It is suggested that adding value to imported fiber is a concept that needs to be considered.

This is a great idea to a point. However, it is essential to realize that countries and regions all over the world are intent on pursuing exactly the same strategy. For the most part, those regions that are exporting logs and largely unprocessed fiber today are working hard to be exporters of lumber, paper, and a wide array of finished products in the relatively near future.

- I agree with the comments regarding certification and endorsement of the building of markets for certified products. This is in my view a good way to create a market niche and some insulation from competitive pressures arising from Asia – at least in the short run.

One comment in this regard that I heard at a very recent meeting of international timber traders is, however, a bit sobering. It was remarked that China today is buying up all of the certified product that it can get its hands on, positioning itself to serve the certified market as it emerges. I have not had time to check the veracity of this comment, but if true it adds a grain of salt to domestically focused certified market strategies.



THE OUTLOOK FOR MAINE'S FORESTRY AND FOREST PRODUCTS SECTOR — TRENDS AND POSSIBLE STRATEGIES FOR POSITIVELY SHAPING THE FUTURE

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Context

Maine has a large forest and wood-based industrial sector that is diversified across a number of segments, including pulp and paper, lumber, composite products, and a variety of secondary wood products. With some 30,000 people employed, forest-based manufacturing constitutes Maine's largest manufacturing industry accounting, according to the University of Maine's Dr. David Field, for 25 to 31 percent of Maine's manufacturing employment, roughly a third of the state's value added in manufacture, and 34 to 44 percent of the value of its total output of manufactured goods.

All is not well, however, with Maine's forestry and wood products sector. Over 3,500 jobs have been lost in the state's pulp and paper industry since 2000, and at least four of the state's 17 paper mills are currently in bankruptcy protection. There are similar problems in the non-paper side of the industry, with job losses in this area approaching 2,000 over the past three years.

Major Factors Currently Influencing the Global Forest Products Industry

There are a myriad of factors influencing the global forest products industry today. In many ways, it is a period of unprecedented change within the forestry and wood products sector.

At least eight major factors are driving change. These include:

- Globalization.
- The emergence of China as a major wood products manufacturer and consumer.
- The growth of forest-based industries in Pacific Rim countries, Russia and Eastern Europe, and the southern hemisphere.
- The extensive development of fast growing tree plantations and of what some refer to as the "wall of wood" globally.
- The ongoing trade imbalance between China and the U.S.
- Forest certification.
- The relatively recent and ongoing development of wood-based composite products technology.
- Rising waste paper recovery and reuse rates.

At least two additional factors, specific to North America, are influencing U.S. markets:



- The aging and pending retirement of the baby-boom generation.
- The ongoing U.S.-Canadian lumber trade dispute.

Globalization

Globalization is impacting all business sectors in virtually all countries. The forestry and wood products sector is no exception. One manifestation of globalization is the consolidation of manufacturing entities worldwide, often accompanied by transfers of ownership to corporations headquartered in distant locations. Such changes serve to intensify the focus of business toward profitability and tend to eliminate or erode allegiance to place that has characterized a number of locally owned firms over the past century. One result is that capital and jobs are flowing today to regions with low labor costs, with the trend accentuated by the diffusion of state-of-the-art technologies to all corners of the globe and expansion of transportation networks within a number of developing countries.

The net results of globalization on the forestry and wood products sector are rapidly rising wood products production and consumption within countries not historically noted as significant players in the industrial wood products arena and renewed industrial forest sector activity in countries recovering from previous economic decline. Countries in the former category include Brazil, Uruguay, Chile, China, and Vietnam, while those in the latter include Russia and countries of the CIS.

The Emergence of China as an Industrial Wood Products Manufacturer and Consumer

After centuries of economic and technological stagnation, China's economy now has the world's most rapidly growing economy. This follows adoption of internal reforms and trade liberalization policies. It is increasingly apparent that industrial and economic growth is not haphazard, but rather the result of careful, targeted planning focused on development of labor-intensive industries. Chinese importation of hardwood and softwood logs and lumber has risen over 760 and 330 percent, respectively, since 1996, and Chinese exports of secondary wood products have risen similarly. This is a very significant development. With momentum provided by very low labor rates and costs of regulatory compliance, China's exports of wood household furniture to the U.S. have increased by more than 2,366 percent over the past decade.

A similar trend can be seen in wood moldings and wood flooring, with exports from China to the U.S. since 1993 up by 8,400 percent and 1,350 percent, respectively. Large increases in net exports of wood kitchen cabinet components from China to the U.S. are also rising sharply. In many cases, Chinese products are manufactured from U.S. logs that are converted to products that, in turn, are offered in U.S. markets at prices well below those of U.S. producers. Further growth of Chinese industries is expected, as is further loss of U.S. market share to Chinese products. U.S. industry segments impacted to the greatest extent thus far by competition from China are those characterized by high labor intensity. Labor-intensive enterprises that have not kept pace with technological



advances through ongoing research and development activity and reinvestment are being doubly impacted.

As China assumes an increasing role as an exporter of products of all kinds, including wood products, per capita income within China is rising. As a result, internal demand for a wide range of products is growing rapidly, and among these are a number of types of wood and wood products. Although Chinese dwellings are seldom constructed principally of wood, it is common to use wood for moldings and doors, partitions, and furniture. Moreover, interest in wood framing as a method of construction is slowly gaining acceptance and momentum. The significance of these realities lies in the fact that very rapid construction of new housing units is occurring within China, with the average size unit far larger than only a few years ago. For instance, apartment units being built today provide approximately 20-24 square meters (215-260 square feet) per resident, still small by western standards, but up from 4 square meters per resident less than 25 years ago. The impact on China's wood products consumption is substantial.

Growth of wood products consumption within China brings with it export opportunities for U.S. producers. Over the past 7 to 8 years U.S. exports of wood products to China have increased significantly for a range of products including treated lumber, flooring, molding, veneer, hardboard, medium-density fiberboard, particleboard, cooperage, and a number of miscellaneous products.

Growth of Forest-Based Industries in the Pacific Rim, the CIS, and Eastern Europe, and in the Southern Hemisphere

While China provides the most spectacular example of expanding forest and wood product sector activity, this is not the only nation presenting a rising challenge to established firms and regions in this sector. For example, the forest and wood products sector is currently undergoing a rapid expansion in Russia and within countries of Eastern Europe generally. Russia alone has recently identified the potential for annual production of timber of 559 million cubic meters (compared to total removals of 447 million cubic meters in the U.S. in 2002). In comparison to Russian harvest levels of the past 15 years almost all of the potential Russian harvest represents new supplies for future wood products manufacturing.

Relative wood abundance in Russia is now attracting a massive influx of new capital to the wood products industry of that country. In addition, markets for Russian wood in China are growing rapidly, and large, well-capitalized processing facilities are under construction along the Russian/Chinese border. As in China, labor rates and costs of regulatory compliance are lower than in the U.S. In addition, wood costs are generally significantly lower than in the U.S.

Other regions that are currently building capacity in the forestry and wood products sector are several of those along the Pacific Rim (in addition to China), and the southern hemisphere countries generally, most notably Brazil and Chile.



All of these developments have implications for producers in the United States and the State of Maine. Brazil, for instance, has recently replaced the U.S. as the largest offshore supplier of softwood plywood to the European Union, and imports of hardwood and softwood moldings and trim from Chile and New Zealand have increased by 759 and 494 percent, respectively, over the past decade. Further, net U.S. imports of wood furniture from Brazil, and Indonesia have increased 566 and 383 percent, respectively, since 1993.

Plantations and the Wall of Wood

Over the past two decades, and in an accelerating trend from the 1980s to the present, over 300 million acres of fast-growing plantations have been established around the world. These are increasingly concentrated in the southern hemisphere on highly productive sites. Such plantations account for only about 4.2 percent of forests globally but provide some 21 to 22 percent of the total annual wood harvest. This percentage is expected to rise to 40 percent by 2045 as large areas of highly productive plantations reach harvestable age within the next 10 to 15 years. This development, coupled with revitalization of the Russian forestry sector and increasing availability of tropical hardwoods, translates to a great abundance of available wood – a virtual wall of wood – worldwide. Such wood is typically low cost and often environmentally certified.

While tree plantations are largely focused on production of pulpwood and on softwood sawlogs, there are currently a number of initiatives underway globally to establish plantations of high quality hardwood sawlogs.

The availability of plantation wood raises the prospect of significant competition with domestic timber stocks and eventual shifts of wood product manufacturing activity to regions in which plantations are located.

The Ongoing Trade Imbalance Between the U.S. and China

The longstanding and continuing trade imbalance between the United States and China impacts indirectly the competitiveness of U.S. industry. One impact is on transportation costs that should effectively prohibit China's current practice of purchasing U.S. logs, processing them to products, and reshipping to U.S. markets at highly competitive prices. However, the availability of thousands upon thousands of containers that carry Chinese goods to the U.S. and that would otherwise have to return empty to Chinese ports provide an almost free avenue for conveying logs, lumber, chips, wastepaper and other industrial raw materials to China.

Forest Certification

Arising from concerns about tropical deforestation, various systems for certifying responsible forest management are being promoted worldwide. Today, approximately 6.5 percent of global forests have been certified under one or more of these systems.



Ironically, the majority of forests that have been certified to date (i.e. those in the United States, Canada, and western Europe) are precisely those most likely to be impacted by loss of wood and wood products markets to developing regions. Conversely, those regions most likely to be the focus of future forest sector development and increasing harvest pressures (Russia, southeast Asia, and the southern hemisphere) have only miniscule areas of certified forests, and the bulk of these are plantations.

The jury is still out on the question of whether forest certification will have a major impact on global forest products markets. For now at least it appears that the availability of certified wood could differentiate products made from such wood from the increasing volumes of non-certified products flowing from China.

Studies consistently show that there is a segment of the U.S. population that is prone to consider environmental attributes of products when making purchase decisions, and to pay a slight premium to obtain them. Such people are primarily those in higher income brackets.

Development of Wood-Based Composite Products Technology

The development of wood-based composite products allows the use of small-diameter logs of low specific gravity and inherently low strength in the manufacture of large-sized structural timbers. Juvenile wood, a significant problem when rapidly grown trees are used to make solid-sawn lumber, has been shown to be much less problematic in composite lumber. Composite lumber products are steadily growing in market share and may eventually totally displace solid sawn lumber, or at least sawn lumber of large cross-section.

One implication of composite products technology is that large diameter trees will be less and less important, and in all likelihood less valuable, as a raw material for production of structural wood products. Another implication is that the usefulness of wood produced in rapidly grown plantations is no longer limited to paper and fiber products production.

Rising Waste Paper Recovery and Reuse Rates

Wastepaper recovery and reuse rates are rising worldwide. In the U.S., recovery of waste paper for recycling reached 50 percent for the first time in 2003, and a goal of 55 percent recovery has been set. The recovery rate in Europe is similar. Virtually all of this paper is reused in the papermaking process, although in North America a considerable quantity of waste paper (over one-fourth of that recovered) is exported for conversion to paper elsewhere.

Even though rising paper consumption has necessitated increased pulpwood harvests, the increase in the recycling rate has significantly diminished the present need for pulpwood harvest as compared to what harvest levels would have been without recycling. Further increases in the recycling rate are likely.



Higher recovery and reuse rates not only dampen growth in pulpwood demand, but also increase the possibility of paper production at locations far from the forest. Today, for example, China is aggressively purchasing U.S. recovered waste paper and is using this to manufacture paper, a portion of which is re-exported to the U.S.

Aging of Babyboomers

The aging and pending retirement from the workforce of the generally affluent U.S. babyboom generation coincides with unprecedented demand for second homes and a trend toward high-end amenities, including furnishings. This group represents a potential market for new and innovative products that cater to consumers for whom price is perhaps a secondary consideration. It is these consumers who are most likely to be attracted to high quality or heirloom products customized to individual tastes and to products linked to favorable environmental attributes.

Ongoing Lumber Trade Dispute with Canada

The lengthy and ongoing lumber trade dispute with Canada has affected the U.S. industry in a number of ways, one of which is a negative image among many U.S. home builders, architects, and homebuyers who view associated U.S. import duties as protectionist actions that serve to drive up prices. Ironically, U.S. forest regulations and management practices do not allow production of sufficient volumes of softwood lumber to meet domestic needs, translating to an ongoing need for importation of over one-third of U.S. consumption.

Emerging Factors That Are Not Yet Apparent

In addition to the major factors that are widely recognized as influencing the global forest products industry, several other change-driving factors, or mega-trends, are only now emerging. These include the likelihood of petroleum scarcity within the relatively near term, the coming bio-revolution, rapidly growing global demand for housing, and the prospect for implementation of a life cycle-based product labeling program within the U.S. and Canada.

Oil Scarcity

After decades of discourse that for the most part led citizens to conclude that oil could last indefinitely, peak oil production is now a likelihood within the relatively near term. Projections from a number of energy forecasting agencies are beginning to converge on the period 2010 to 2020 (OECD International Energy Agency) to 2037 (USDOE) as that in which peak production worldwide will occur. The implications for virtually all aspects of the global society are profound.

Nations or regions that are able to position themselves for a smooth transition to alternative sources of energy are likely to fare far better economically and otherwise than nations or regions that do not adequately anticipate or adapt to change. An open question



is how China's burgeoning economy will fare in a petroleum-scarce world, given the paucity of energy resources within that country. Indeed, how the U.S. will fare is less than clear, as thus far relatively little attention has been given to this nation's energy future.

All sectors will be affected by petroleum scarcity, including the forestry and wood products sector. It appears, however, that this sector may fare much better than other sectors in view of its history of wood-to-energy conversion and relative independence from utility-produced energy. It is clear in any event that in the not-too-distant future prices of wood in any form will have to reflect the value of wood as an energy source.

The Coming Bio-Revolution

The long rumored bio-revolution is now at hand. Technology is available today that allows the use of biomass as a raw material for production of virtually all of the various products now obtained from petroleum. This reality is not lost on the North American pulp and paper industry which is now actively planning for conversion of its pulp mills from pulp production centers to full bio-refineries capable of producing a full range of biochemicals, biofeedstocks, and various forms of energy in addition to wood pulp. It is envisioned that this conversion will result in the ability to produce energy well beyond the internal needs of the bio-refinery; in other words, the bio-refinery will be energy self-sufficient and will also sell energy to the regional energy grid or to regional markets in the form of liquid fuels. This transition will require massive investment, but is also expected to significantly enhance industry profitability.

Bio-refinery development will not be limited to forested areas but will also occur within agricultural regions, fed by agricultural crop residues or dedicated fiber crops. However, it now appears that woody materials may be the raw material of choice.

Expanding Global Demand for Housing

Considering all factors, as many as *750 million to one billion* new housing units will be needed globally by 2050. Who will supply these units and the construction materials for them remains to be seen. Successes of emerging economies are fueling growth of consumer classes in regions long dominated by poverty. These are generally the same areas of the world in which population growth is greatest. The combined effect of rising incomes and expanding populations is increasing demand for housing. In some cases, young couples, who previously would have had to live for a number of years with parents because of housing cost and non-availability, are gaining the ability to buy or rent housing units of their own. In other instances continued growth of the population, expected to expand by 50 percent globally by 2050, is driving rising needs for housing.

Environmental Labeling of Products Based on LCA/LCI

European countries have long had labeling programs for a wide variety of consumer goods to provide environmentally conscious consumers with information about



environmental attributes of products. Now, as a result of work over the last several years on the part of the U.S. Environmental Protection Agency and the U.S. Department of Energy, much of the groundwork for product labeling within the U.S. has been laid through an initiative known as the U.S. Database Project. Under this project, life cycle inventory data is being collected for a wide range of industries, including the wood products industry. This data will provide a means of benchmarking environmental performance within particular industries and prioritizing environmentally oriented investment decisions. This information also provides a basis for environmental-attributes labeling of a wide range of products. The program could lead to the world's first environmental labeling program based wholly on internationally accepted protocols for life cycle inventory/life cycle analysis. This development is significant for the wood products industry because wood products tend to compare very favorably from an environmental perspective to common substitute materials.

What Might Be Maine's Niche?

Identifying options that might realistically provide Maine's forest and wood products sector with a defensible niche in global markets requires both careful consideration of current trends and emerging factors that are likely to influence Maine's forest and wood products sector and identification of Maine's competitive advantages.

Some of Maine's competitive advantages are:

- It has abundant forest resources.
- Many of its forests are certified as responsibly managed and current initiatives are directed toward bringing even more acres under certification.
- It has a long-established and extensive forest-based industry, including experienced artisans and woodworkers and a sizeable pulp and paper industry and associated supplier network.
- It has a reputation as a pristine and environmentally responsible region.
- It has an extensive transportation infrastructure.
- It is located close to population centers in the Northeast.
- It is well positioned geographically to efficiently provide just-in-time delivery to distributors of manufactured goods.
- It is a coastal state, with direct access to Atlantic trade routes.
- It has a world-class advanced composites research center.

In view of trends and emerging factors discussed earlier, what might be Maine's niche opportunities in the global forestry and wood products arena? Possibilities include:

A center of highly mechanized, mass customization of made-to-order, heirloom quality furniture, cabinets, doors, moldings, and other wood products.

Today much of the automobile industry operates on a business model in which vehicles are not manufactured until they are ordered, with the customer able to specify interior and exterior colors, engine size, sound and climate control



options, and a host of other features. In most cases, the customer is able to view options and complete an order using the Internet. This is an example of a mass customization model.

Given the large and aging U.S. babyboomer population, many of whom are financially able and inclined to purchase high-end products for primary and secondary homes, there may be an opportunity for a large-scale similar model in wood products; indeed, at least one such company is currently in operation. This kind of entity would offer made-to-order cabinets and furniture with custom sizes, moldings, decorative accent colors, custom engravings, custom veneers and lay-up patterns, environmentally certified or non-certified wood, and so on, that could be designed and ordered by the customer via the World Wide Web. A similar approach could be taken for outdoor furniture, components for decks, interior and exterior doors, flooring, paneling, moldings and stair railings.

A critical mass of bio-industry/bio-refinery companies and associated companies that use biofeedstocks and biochemicals as raw materials.

Maine currently has a sizeable pulp and paper industry that is served by a complementary forestry and forest harvest and supplier network and infrastructure. Many of these same elements could support a network of bio-refineries, producing a wide range of products, including energy. Success could lead to new companies focused on use of biochemicals and biofeedstocks for production of a new family of bio-based products as well as goods now manufactured from petroleum by-products.

A center of low-cost housing design, component manufacture, production, and distribution focused on housing needs of rapidly developing nations.

Envisioned is an intellectual and industrial center dedicated to production of housing “packages” for addressing housing needs in the world’s developing regions. The center would perhaps focus on only one or two specific countries, at least initially, and bring a high level of innovation to design and delivery concepts, as well as sophisticated automation to allow production of low-cost, but highly durable housing units. Such an undertaking would perhaps be complementary to the bio-refinery and bioproducts concepts, as well as to development of advanced wood-based biocomposites.

A highly publicized center of exquisite quality, environmentally responsible products made of certified wood and perhaps identified with “Made in Maine” and/or life cycle-based product labels.

Such a strategy might work if promotional efforts were concentrated on the segment of high-end consumers most likely to be willing to pay for environmental attributes. A caution regarding this strategy: at least three other states – Oregon,



Minnesota, and Michigan are pursuing or seriously considering implementation of similar strategies.

A concentration of paper manufacturers using various combinations of 100 percent certified roundwood and recycled fiber with the goal of enhancing Maine's image as a place to come for environmentally responsible products.

Take advantage of Maine's proximity to Northeastern urban and wastepaper generating centers, as well as the long history of papermaking, to move heavily and very visibly into "environmental paper" markets. This strategy would be compatible with the bio-refinery concept and with a strategy of developing environmentally responsible, "Made in Maine" industries.

A center of advanced wood-based composites products manufacturing.

Maine could build upon the successes of the University of Maine's Advanced Wood Composites Research Center to commercialize new products and create new businesses dedicated to production of highly durable, engineered niche products for a variety of markets. This kind of initiative would complement the bio-refinery and (perhaps) the housing center concepts, as well as strategies to increase the use of recycled fiber.

A duty-free U.S./Canada enterprise zone located on the Maine/Canada border

In view of intense and rising competition within the forestry and wood products sector from outside the borders of the U.S. and Canada, some kind of initiative to foster U.S./Canadian cooperation could potentially improve the competitiveness of the industries of both countries, while also improving the image of the U.S. industry among consumers.

How Can Maine's Government and Industry Leverage the State's Competitive Advantages?

What steps might be taken to bring about positive change in the forestry and wood products sector of Maine?

In general terms, it may be worthwhile to engage the Maine forestry and wood products sector in discussions regarding new global realities and competitive challenges facing this sector and to lay the basis for innovative thinking around repositioning associated industries. Assistance with obtaining benchmarking productivity data from other states and regions, and with facilitation of workshops and seminars focused on lean manufacturing and similar topics, and on increased understanding of expanding wood products markets within China and other emerging economies might also be useful.

More specifically, actions might target some of the niche areas identified earlier.



Develop a Mass-Customization Business Model

- Identify existing companies that might be amenable to adoption of mass customization.
- Seek to create an academic center of excellence and business incubator zone focused on mass customization.
- Consider how governmental entities and programs might be used to encourage business development in this area.
- Seek consulting assistance from those working in the mass customization arena.

Develop a Network of Bio-Refineries

- Conduct a preliminary feasibility study of the prospects for a bio-chemicals / bio-energy industry in Maine.
- Engage the state's pulp and paper mills in dialog regarding their interest in potential conversion to bio-refineries. Seek to understand what actions might enhance the possibility of Maine becoming a focus of early adoption of the bio-refinery model, including needed actions in attracting investment capital. Similarly, engage in discussions with the State's energy utilities.
- Identify remaining technical barriers to realization of a commercial biochemical/ bioenergy industry and call upon expertise in the University of Maine and elsewhere to solve them.
- Consider regulatory and other barriers.

Develop a Global Housing Innovation/Industrial Complex

- Conduct a preliminary analysis of developing-country housing needs in regions that might logically be served by Maine producers, including size and amenity requirements, probable price points, and other factors. Seek to understand customs, attitudes, accepted business protocols, etc. in countries and regions of interest.
- Engage the state's manufactured housing industry and others in dialog regarding their interest in an industrial housing initiative.
- Develop a conceptual model identifying component parts of a functioning global housing complex and an outline of how such a complex would function.

Position Maine as a Source of Environmentally Preferable Products



- Engage in strategic thinking from a marketing perspective to identify cost-effective steps that could be taken to position Maine as an environmental leader in the minds of consumers.
- Bring together business, industry, academic, government and environmental leaders to consider whether such an initiative might be mutually embraced.
- Seek to become a leader in environmental-attributes labeling of products.

Establish a U.S./Canadian Wood Products Enterprise Zone

- Explore with federal authorities the possibility of creating a duty-free lumber and wood products enterprise zone on the Maine/Canadian border.
- Convene a meeting of U.S. and Canadian interests to explore potential uses of a duty-free enterprise zone (such as, perhaps, a U.S./Canadian global housing innovation and manufacturing complex).

Conclusions

Dramatic changes are occurring in the forestry and wood products sector worldwide that markedly enhance the global competitiveness of developing nations. These changes represent a significant threat to established firms in economically developed regions, such as those in the State of Maine. Given this situation, bold new strategies and actions will be needed to ensure continued vitality of Maine's forestry and wood products sector. Timing in this regard is critical, as the rate of change in competitive factors is rapid, and the likely costs of delay in responding quite high.



Lloyd Irland Comments Regarding the Jim Bowyer Paper

For this essay, I would like to comment on a number of points stimulated by Bowyer's paper. I do not format this as a line-by-line or point-by-point series of comments following his essay, but do comment on many of his points.

We need a clearer understanding of globalization

Clearly globalization is critical, yet we may all be talking about different things in using the term. Much of globalization's impact is through the market itself, and not through business consolidations or multinational buying and selling of assets. Improved and lower cost communications and logistics management accounts for much of this.

At this point there does not exist a single truly "global" paper company; the same is true for lumber and certainly true for value added products. By and large, multinational investment is bilateral, or confined to a small number of locations.

Seeing names like Stora and UPM in the northern U.S. is unfamiliar to us, and has happened very quickly. Yet this is not really a significant change in the US paper industry as a whole. Globalization is a lot bigger than this.

I have the impression that North American firms are actually behind the curve when it comes to globalization – the most globally diversified companies are not the American ones, and probably not the Canadian ones either.

We need a richer vocabulary for understanding different dimensions of globalization, how they affect the US wood sector, and what it all means for Maine.

Globalization is not the Cause of everything that's going on

Mills are getting closed because they cannot compete. This is not caused by globalization. If you look at producer price indexes for value added wood products, they show cost inflation well beyond the average for the PPI as a whole, and far higher than competing materials like plastics and steel. This was not caused by globalization, yet it certainly suggests a price competitiveness problem that creates opportunities for offshore competitors.

The truth is that our industries have been sheltered from offshore competition by a number of factors. Only recently have they been forced to face serious offshore competition, due to some of the forces Bowyer mentions, as well as trade liberalization.

Globalization is not the reason that no greenfield pulp and paper mill complex based on virgin fiber has been built in the US since the late 80's. When an offshore company buys one of the existing museum pieces, it is not the fault of "globalization" that they are compelled to tear out machines and downsize to remain competitive. Many of the mills are small, ancient, and noncompetitive in the current century.



Plant shutdowns due to consolidation are occurring due to largely domestic mergers (IP-Champion, etc), and the dramatic and unexpected shrinkage in demand (see below). Globalization is not the fundamental cause of the over-saturation of our paper markets and resultant woes of the paper industry, nor of the maturity of the solid wood sector.

China

Bowyer's observation about the huge flow of empty containers westbound across the Pacific is an important one. What opportunities might this create for us to ship something besides wastepaper and logs?

Are there some large Chinese organizations that would seek joint venture partners to source particular types of wood products or blanks in the U.S.?

It has taken decades to learn to serve the Japanese market; just as soon as we think we get it, their market changes decisively. For too long we complacently assumed they would happily buy overpriced logs till kingdom come. What we think we know about Japan will not apply to China; we must start all over.

Russia

I see Russia largely serving its own (hopefully) growing internal needs for wood, those of traditional Northern European customers, and the log requirements of China. Their paper industry is not competitive even with neighbors. I think very large bilateral Russia-China log trade can occur without much effect on the rest of the world's softwood markets. Sooner rather than later, this will be limited by the transport costs that render much of the Siberian wood inaccessible now and for decades to come. Russia may get the worst hit of anyone from the "Wall of Wood".

Composites

Big picture, I suspect emerging composites technology will benefit Maine's competitors more than Maine – other areas have energy costs, shipping costs, proximity to value added users, and pools of unused fiber. I'm guessing the potential for Maine will have to be in specialty niches – we need to stay out of the way of high volume commodity producers. Just what those niches are, however, I cannot say.

Waste Paper and Pulpwood

I have not sufficiently appreciated the recent interactions between paper demand, recycling, and pulpwood demand. A few points –

- Demand grew rapidly for both paper and pulp from the 70's through 1999. In that year, the all-time peak for paper and board "new supply" (= consumption) of 105 million tons was reached. Consumption crashed by 8 million tons in the next 3



years, recovering slightly in 2002. This was a huge reversal in the supply/demand balance.

- The root cause was not imports, though they had been rising steadily up to 1999. Imports of paper and board were roughly constant 1999-2002.
- US pulp production peaked at 66 million tons in 1998, and exceeded 65 million tons in 1992, 94, and 98. Production then fell out of bed, from 66.6 million in 1998 to 58.1 million by 2002, a loss of more than 8 million tons. This loss was far larger than Maine's production.
- Growth in US pulpwood consumption essentially stopped in 1987, and was not drawn further upward by rising paper usage. After 1987, there were only 3 years when production exceeded 93 million tons – 1988, 1994, and 1995. On these figures, US pulpwood usage stopped growing 17 years ago, and then fell with a thud after 1997, losing almost 10 million cords. (N.B., this is roundwood plus chips)

It has taken us some time to adjust our thinking to the plateauing and then the decline in these production volumes. We may yet not fully appreciate the causes or understand the outlook. At the very least, it seems to me that the latest USFS output projections do not adequately allow for the implications of recent market trends. (source: FPL –RP-615, 2003.)

Bio-Revolution

I have not been following paper industry thinking on this subject. It would be worth catching up on that. It is by no means obvious, however, that Maine offers a competitive location for such activities, either for conversions of existing mills or investment in Greenfield capacity. This question probably deserves at least a reconnaissance –level look.

Also, existing entrenched producers based on petroleum may not eagerly welcome bio-based competition and may have means of defending their market positions. The assumption that these markets are immense and offer high margins is unvalidated, so far as I am aware.

Maine's Niche

I think when you look at expansion potential, quality, and costs, Maine cannot be said to have “abundant” forest resources, in comparison to likely competitors.

We have had so many people busy tarnishing our reputation for environmental performance that I do not have a sense of what the outside world sees... but would hesitate to take that for granted.

I would not overemphasize the strength of our transportation infrastructure. I'm not sure our coastal location helps, as our ports are basically improvisations and vessel sailings are limited in frequency and destinations. Long ago, we built half the nation's shipping....



our waterfronts bustled. It's over. Much of our export tonnage goes to the world through ports elsewhere, or through points with little expansion potential.

Niches and Actions

All of Bowyer's suggestions deserve at least preliminary assessment and ranking for fatal flaws before proceeding to more fully develop one or more of them.



Comments on Jim Bowyer's and Lloyd Irland's papers for the Maine Future Forest Economy Project

By

Al Schuler
USDA Forest Service

In general, this is a tough assignment, finding opportunities for Maine's forest product industries in today's increasingly global business environment. Both authors have done an admirable job in addressing the mandate. However, when one looks at the "opportunities" identified, there aren't many that seem viable to me, at least in the short term (5 years). I think Irland does a better job in addressing opportunities and problems specific to Maine – he is probably more familiar because he has lived there for much of his life. He also identifies the problems/issues and potential solutions in a more realistic manner whereas Bowyer's essay is more academic (in my opinion). On second thought, Bowyer's ideas are more long term, and may come to fruition. Not sure of time frame however – Maine's existing industry may not be around to see the "changes".

Here are some specific comments:

1. Fragmentation within the forest products industry is quite high, despite recent M&A activity. Fragmentation makes it difficult to do relevant research and development (R&D) – how to obtain consensus re: what R&D needs to be done? Funding for R&D in forest products is terrible – less than 2% of sales and that is probably an optimistic number at that. The main public organization for conducting forestry R&D – the U.S. Forest Service – has changed R&D focus in response to shifting public interests. However, this has left the industry with a shortage of quality R&D in my opinion. Universities have taken up some of the slack, but research dollars are hard to come by. The equipment manufacturers do much of the R&D for the industry as a result. So, how to change this situation? I think the Federal government could take a more proactive role, but forestry has to be seen as being important to the U.S., and I'm not sure forestry has the ear of the necessary decision makers. For the most part, it is seen as a "sunset industry" - a similar situation exists in Canada, unfortunately. Somehow, this attitude needs to be changed or at least show the "powers that be" that the U.S. forest industry is losing (lost) its competitive position – just look at our trade flows – imports keep increasing while exports decrease for most products. And we are exporting logs – I thought only 3rd world countries did that???

2. We need to benchmark both the hardwood and softwood industries *vis a vis* the rest of the world (primary and secondary sectors). We need to do this to provide the basis for developing remedial strategies; realistic vision of future; and to convince the stakeholders what is right direction(s) to pursue. There are studies available in softwood arena I believe, but not much on hardwood side. *This is an area where the Forest Service might be able to help – benchmark our*



domestic hardwood industry (primary and secondary) vis a vis rest of world.
Until this is done, I'm afraid identifying "opportunities for the U.S. and Maine" is mostly an academic exercise.

3. Certification/certified products may turn out to be a good opportunity for Maine, but I'm not sure when this will become profitable.

4. Our industry does a poor job (in my opinion) in investing (in domestic mills) in their future – CAPEX spending is less than Canada and Europe.

One reason may be the regulations in USA versus rest of the world. It takes 12-18 months to go through the permitting process for a sawmill, similar time for OSB in several southern states – not conducive to investing capital I'm afraid. This issue has to be addressed at the state and Federal levels. Why build a new mill in the USA when fiber is cheaper in South America; fewer regulations; as a result, several large U.S. companies – e.g., Weyerhaeuser – are investing heavily in South America and NZ – to source wood products for global markets including the U.S. Boise cascade, recently exited the business of manufacturing of forest products. And U.S. companies are divesting much of their forestland holdings. Clearly, the U.S. industry does not see the U.S. as a good place to invest – I'm exaggerating here, but the U.S. forest products industry has some difficult hurdles to overcome if it is to become globally competitive again. For some industries (most commodities), that probably is not possible. We need to add value (in excess of added cost) in order to move up the "food chain". If we don't, and we stay mired in commodity production, we will lose out to other regions that are more competitive for a host of reasons. I believe both Lloyd Irland and Jim Bowyer talked about the need for customized production in some wood product lines – yes, I agree. But, key question is – do we have a supply chain that will allow this to happen??

5. Both authors discuss bio energy / bioconversion options. Not sure of timing for this – when will it become economically feasible? We have been talking about oil shortages/prices for decades – mostly since the Oil Embargo of the 70's. But, we still haven't done much in my opinion to reduce our reliance on foreign imports. However, wood energy may be an option for some.

6. Global demand for housing – nice idea, but it has been talked about for decades. As the world's standard of living increases, demand for housing will definitely increase – but will it be wood frame housing? If it is, there are lots of alternative sources for framing lumber – Russia; Europe; maybe South America; In fact, there may be a glut of wood in the future? E.g., Bowyer's reference to the "wall of wood".

Conclusion: I agree with both authors – Irland and Bowyer – that bold new strategies need to be developed in order for Maine to move into the 21st century wood products arena profitably. The relevant stakeholders need to get together (conferences, etc.) and discuss the realities of the current situation; the realistic



options; how to execute strategies to achieve better times; and how to build consensus regarding future course(s) of action. Irland mentioned “trade policies” – the U.S. government needs to rethink this issue as “special interest groups” have dictated trade policy in softwood lumber for over 20 years. Because the industry is so fragmented, special interest groups are successful, unfortunately. The “business environment” for investing in U.S. greenfield mills is difficult – again, government needs to get involved to “level the playing field”. Finally, we need to “move up the food chain” if we are to regain competitiveness and profitability. I don’t think we can compete (or soon we will not be able to) in many commodity markets – U.S.A. or Maine. How (what skills, equipment, education, etc.) and where to move up the food chain – that is a key issue? Where can we be competitive??

