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BRANCHING OUT
How to make disruption an advantage in the forest products industry

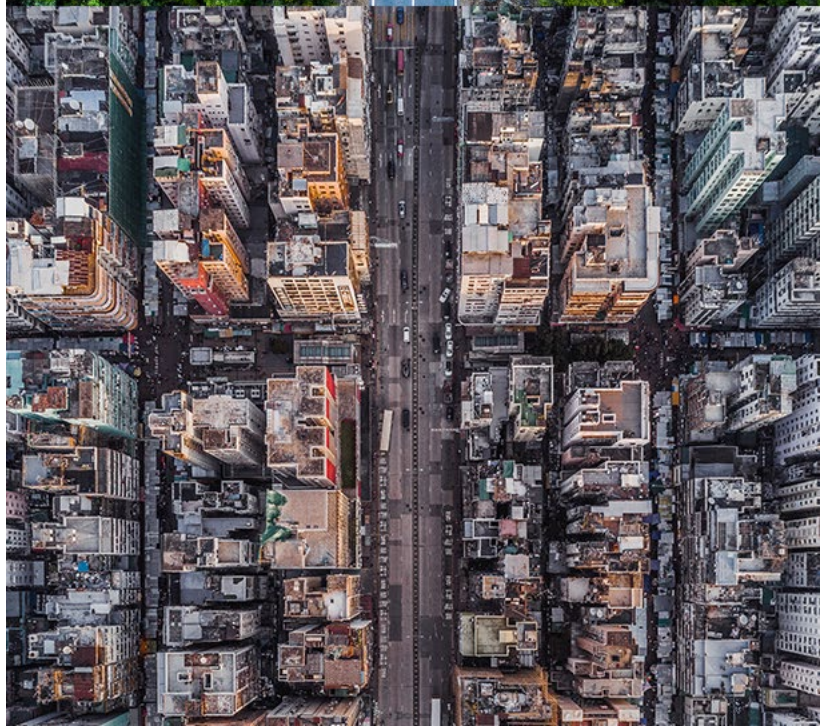
Imagine a more sustainable future where forests supply most of the basic materials for life.

In that future:

The world grows and recycles materials to supply a variety of industries with what they need—using materials extracted from the earth is the exception, rather than the rule.

The forest products sector is widely recognized for its net-positive impact on the environment, thanks to carbon absorption in lush forests, carbon sequestration in new wood-based buildings and durable goods, and low environmental impact of the industry's manufacturing practices. Leading the charge in manufacturing using the latest digital technologies, pulp and paper processing has been transformed so that it requires only low levels of energy, chemicals and fresh water.

Societal demand for sustainability has led to forest-based products dominating consumer markets and has enabled the industry to attract the most innovative and productive workers. Overall, the forest products industry has become the leading supplier to, and environmental conscience of, the rest of global manufacturing.



While it may take some time for this vision to be realized, the societal, market and economic forces that could drive this future are already in motion.

Glimpses can be seen across the world today: Building materials companies are investing in new product development and manufacturing capabilities to provide highly engineered wood and cellulose products. Pulp and paper companies and "green" startups are developing advanced recycling processes to close the circularity loop on even the most difficult-to-recover fiber-based, single-use products. And a consortium of Japanese universities, researchers and companies have created an automobile built of nanocellulose, sourced from chopped pulp fibers.[1]

Meanwhile, sustainable forestry certification levels continue to rise, and the total area of forested land has declined at a slower rate in recent years,[2] notwithstanding the devastation from the 2019 and 2020 fires in Brazil and Australia. Many consumer goods companies are using carbon offsets to support their zero-carbon emission strategies.[3]

These carbon offsets are primarily investments in trees, and those carbon-grabbing trees have the potential to account for up to one-third of the carbon dioxide mitigation target for 2030.[4]

When combined, these efforts are having an important impact—but the pace of change in the forest products industry is slow, setting the stage for external disruption. The size of the prize will attract competition. For example, the single-use plastics packaging industry is projected to reach US$47.3 billion by 2025.[5] Why not use paper, board and cellulose for some of that? Taking just a small amount of packaging market share from plastics would translate to a notable increase in forest-based packaging sales. Or, consider the steel industry, projected to be worth US$133 billion by 2025.[6] Why can't engineered wood and cellulose take over more of that business?

It's time for forest products companies to act and turn these impending disruptions into industry advantages.

Riding the winds of change

The forest products industry survived an initial disruption years ago when online formats overtook paper as the preferred means of communication. Now, disruption is again at the industry's doorstep.

Accenture researchers have developed a "Disruptability Index" that determines the likelihood of disruption in an industry based on factors such as asset and labor intensity, investments in innovation and the presence of new entrants.[7] The paper products, paper packaging and construction materials segments all fall into the index's "vulnerable" category—one in which disruption is pending. As such, the forest products industry can combat future disruptions headed its way, or it can go on the offensive and become the disruptor of other industries.

One bright spot is that the current focus on sustainability provides a host of new opportunities. Consumers' interest in sustainable products—and their willingness to pay for them—is growing,[8] and that is driving change as much as governmental regulation or cost-to-produce economics.

In this environment, the forest products industry has an advantage over other materials producers—such as mining and chemical companies—in that society typically sees products made from "grown" materials as being more sustainable than metals or plastics. In fact, 55 percent of surveyed consumers perceived paper-based packaging materials to be the most environmentally friendly, with glass far behind in second place at 29 percent.[9]

To take advantage of this trend, forest products companies need to act while sustainability is top of mind for consumers and governments—because attitudes can change and so can the competition.

of surveyed consumers said that they plan to buy more eco-friendly products over the next five years. About the same percentage believe it is important for companies to design products that are meant to be reused and recycled.

perceive paper-based packaging materials to be the most environmentally friendly, with glass far behind at 29 percent. Aluminum, steel/tin and plastics are significantly below that, ranking in the low single digits.

Source: Accenture Chemicals Global Consumer Sustainability Survey 2019.

Ultimately, in the face of disruption, many believe it is better to think and act as a victor, rather than a victim. For forest products companies, there are three ways to make this happen:

Dominate the competition through innovation

Although paper products are widely seen as being more sustainable than single-use plastics, they are not viewed as positively as durable materials—and in time, that could benefit plastics producers. It is entirely possible that a circular "new plastics economy" could bring plastic products to market that are more sustainable than those made from today's forest-based materials.[10]

In addition, new entrants are seeking to replace not only extracted materials, but also traditional, less-sustainable forest products. Retailer Ikea, for example, uses packaging materials manufactured with mycelium technology, which uses mushrooms to bind agricultural waste into a strong, yet readily biodegradable product.[11] And Gramitherm® (owned by Clean Insulating Technologies) is a thermal insulation board made from grass fibers via an air-laid thermobonding process.[12] To keep up, forest products companies need to embrace evolving societal trends, learn from innovative customers and competitors, and think beyond the trees and deep-rooted industry approaches. The future belongs to those who put together novel combinations of traditional and nontraditional grown materials and processes from nature and other industries.

Where can the industry focus its efforts?

Packaging has been a bright spot for forest-based products, due to increased shipping driven by online shopping, along with single-use plastics being restricted or banned in several countries and local jurisdictions. However, consumers are beginning to view all types of single-use packaging—not just plastic—as avoidable waste. And some companies are already taking action: Lush, a UK retailer, sells 35 percent of its in-store products "naked," meaning packaging-free.[13] As a result of this changing demand, the forest products industry's long-term opportunities in packaging are likely to be limited.

Fortunately, there are plenty of other market segments to address, especially when it comes to single-use products, such as disposable diapers. Environmentalists have long pointed to disposable diapers in landfills as a big problem—and Vanuatu, the small Pacific island nation, became the first country to ban their use.[14] One company took a run at the problem by separating the cellulose from used diapers and reusing the fiber in other products. Recognizing the opportunity, Procter & Gamble has since made commitments toward turning its disposable diaper products into "circular" diapers.[15] This part of the circular fiber value chain could easily be "owned" by forest product companies in partnership with the world's major consumer goods companies, as fiber recovery and recycling technology and operations are already a strength of the industry.

Another opportunity lies in the direct substitution of plastics and metals in durable goods with forest-based products. The steady advance of additive manufacturing from its roots in 3D printing is now incorporating oriented fibers[16] in structural parts, which opens the door to more highly engineered forest-based products.

Improvements in nanocellulose production are leading to cost-competitive, high-performance automobile components that can replace parts currently molded from plastic or machined from metal.[17] Nanocellulose—along with large engineered wood products or mass timber—can also be used in the construction industry. Mass timber has been used widely in Europe for years and could bring a significant increase in lumber sales to North America.

The key to capturing this revenue potential is to accelerate the sustainability trend that has already started, and to support the infrastructure and ecosystem required to manufacture and build with next-generation products such as mass timber and nanocellulose. The forest products industry needs to move quickly on this front, while its competition—the steel[18] and cement[19] sectors—is struggling with the responsibility for combined global greenhouse gas emissions of approximately 15 percent. Wait too long and the steel industry may find a way to commercialize something such as MIT's novel steel manufacturing process, which has no emissions besides pure oxygen.[20]

Embrace waste and drive it to zero

The forest products industry may have consumer sentiment on its side, relative to single-use plastics. But it still generates roughly 2 billion tons of waste each year, mostly in the form of wastewater and sludge.[21] Both of these waste products can be largely eliminated by rethinking water usage with the goal of becoming "net-zero users" of fresh water.

Plantations, pulp and paper mills, and even paper recycling operations use large amounts of water, competing with the needs of other private and industrial users. Several mills in the U.S. have had their water supplies restricted due to over-drafting of aquifers. In terms of looking for viable solutions, ocean desalination is an unlikely alternative as it is costly, energy intensive and harms marine life. However, feasible solutions may include rainfall harvesting, recycling water, reducing use and maximizing water yield from other waste products.

The good news is that many mills are starting to look at what it means to become net-zero water users. And, as water scarcity problems continue to mount, the forest products industry will need to lead industrial water conservation or risk being shut down.

In addition to cutting water usage, forest products companies can capitalize on their waste product, using sludge as an input or even a revenue-generating product. Sludge, which is composed of paper fibers and minerals, can be used in many ways. It can be broken down into bio-oils and raw materials that are suitable for use in the manufacturing process as an alternative to fossil fuels.[22] A growing number of pulp plants are recycling their waste sludge into fertilizer for forest land—a practice that the Finnish Forest Industries Federation estimates could provide a €220 to €240 million opportunity in that country alone.[23]

Creating opportunities by eliminating waste is not limited to manufacturing.

For example, data can be used to help manage forests more efficiently. In Europe, one company has created an intelligent forest that uses data and remote sensing to gather insights that help forest owners better understand their wood supply, allowing trees to grow to their biologically appropriate age and bind more carbon. A U.S.-based company, SilviaTerra, has created the first high-resolution inventory of all U.S. forests and is using artificial intelligence (AI) to model forests into the future by considering all the variables that make up sustainable management.[24] As access to data is democratized, landowners will continue to gain power to make better decisions that ultimately balance economic and social values to drive down waste and maximize carbon sequestration.

Still other companies are utilizing data in combination with unmanned aerial vehicles (UAV) to reduce costs and increase growth rates. One startup is using drones to select ideal planting sites and fire germinated seedlings into the soil, which reduces reforestation costs by 80 percent while increasing survival rates.[25] The same drones can be used throughout the life of those trees to apply fertilizer and water, and to inspect trees for disease and pest issues. Overall, there are many opportunities for forest product companies to reduce waste throughout the forestry and manufacturing value chains.

Be generation forward

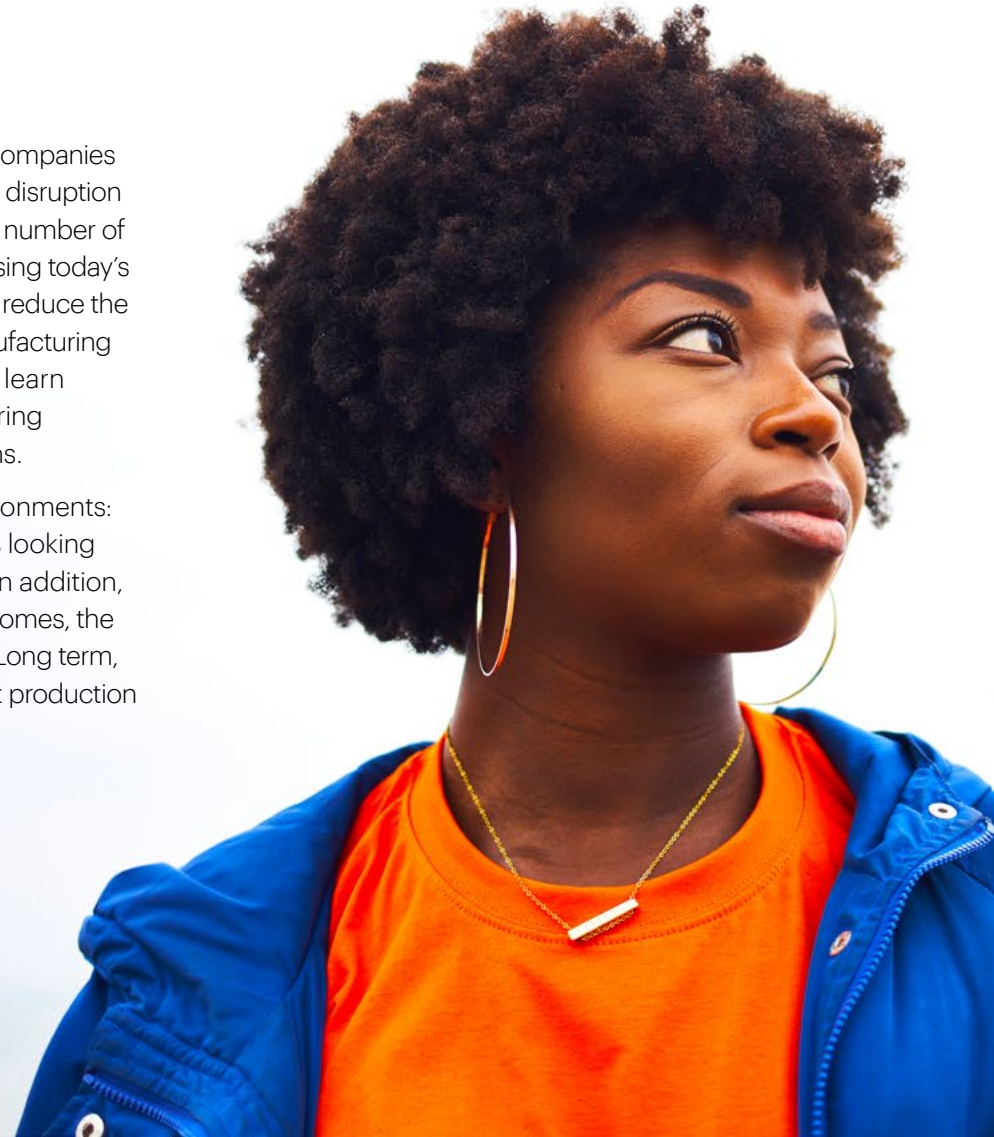
Forest products companies face an existential threat as they move into the future.

Historically, mills have been located close to the sources of trees, and rural communities have supported the labor in those mills. However, times have changed. People are moving to urban areas, and the sources of forest-based materials are becoming more diverse. Forest product companies must learn to embrace both a changing supply model and a changing demographic.

Since many Millennials have now selected their career paths, Generation Z workers are the new focus for entry-level roles. Accenture research[26] has found that the Generation Z population—usually defined as those born in 1995 or later—tend to worry that their skills will be underutilized and that their work may not be meaningful. These youthful job seekers are looking for work-life balance, career development, learning opportunities and flexible work schedules. However, these priorities are rarely a good fit with the forest products industry, where shift work, rote tasks, obsolete technology and remote locations are the norm.

There are several strategies that forest products companies should consider in response to workforce-related disruption due to urbanization—starting with minimizing the number of on-site personnel required in remote locations. Using today's digital technologies and process automation can reduce the need for people to be physically present for manufacturing operations. The forest products industry could learn from the mining sector, which is already pioneering the development of fully autonomous operations.

Roles can also be relocated to more urban environments: think college towns for engineering and regions looking to revitalize for final manufacturing operations. In addition, the more circular a forest products company becomes, the more important it will be to grow "urban forests." Long term, these metropolitan environments are where most production facilities will need to be located.



To reach younger workers, forest products companies will need to rethink their talent strategies.

of workers (across industries) believe that it is important to develop their skills to work with intelligent machines over the next three to five years—and the percentage was even higher for younger respondents.[27]

To that end, leveraging digital technologies such as virtual reality and augmented reality to speed skill development, along with better communication and coaching to improve the employee experience will help demonstrate the importance that the organization places on new employees. The industry also has an opportunity to attract next-generation workers through a relentless focus on sustainability since this group expects companies to adopt—and continually advance—environmentally friendly policies.

New employment models may be in order as well. For example, forest products companies could collaborate with a network of partners from other asset-intensive industries to share workers with certain competencies that are not needed full time. The World Economic Forum, in its "Future of Jobs" report, recommends leveraging flexible working arrangements and talent platforms in the short term, as well as cross-industry and public-private collaborations in the long term.[28]

A data scientist, for example, might move back and forth between a forest products company and an energy company. This shared-work approach could give workers more opportunity to use and expand their skills, while giving companies greater workforce flexibility and access to important skill sets.

Finally, taking a careful, measured approach to improving employee experiences will be critical to attracting the best talent. And these workers will need corporate support to develop innovative products and take them to market; they will need incentives to reinvent manufacturing processes; and they will need digital technologies to operate mills and supply chains safely and efficiently—plus have fun doing it. It may be a heavy lift, but forest products companies that get these things right will become talent magnets.

Steps to reinvention

Significant disruption is once again coming to an industry that has seen plenty of change over the past 50 years. Rather than waiting to see how events unfold and then reacting, forest products companies need to begin reinventing themselves now in order to become the disruptor, rather than the disrupted. Against this backdrop, three building blocks of reinvention include:

Adopt a transformative purpose

Claim the high ground for forest products with respect to sustainability, by tackling challenging social and technical problems, implementing new technologies and elevating the employee experience. Provide the opportunities and working environment to attract and retain the best people who are searching for meaningful and purpose-driven work. Inspire and direct these workers to expand the use of forest products in durable goods and construction, as well as in recovering fiber from single-use products—or risk being a commodity fiber supplier to those competitors that do.

Invest in innovation

Build innovation capabilities across the organization, with a focus on developing products and processes that are aligned with the demand for increased sustainability and social responsibility. Instill an innovation mindset into the company culture to encourage a faster rate of change while still making incremental improvements. Embrace strong leadership to manage risk and ensure tolerance for challenges to conventional thinking and legacy product lines.

Pivot wisely and quickly

Avoid the trap of too much talk and not enough action. Start by improving the productivity of employees and partnering across the ecosystem to rapidly increase scale—a low-risk play that keeps the company's options open. Define what winning looks like in priority markets and geographies with respect to emerging technologies, sustainability and the circular economy. Take a critical look at current operations and vulnerabilities, and develop transition plans to bolster promising areas or wind down others. Finally, execute the strategy and develop the agility to incorporate and take advantage of rapid changes in market dynamics, consumer sentiment, regulatory measures and competitor moves.

During the next few years, our expectation is that strong leaders will emerge with an ever-increasing focus on the circular economy and sustainability.

The opportunities are vast, but so are the challenges with intensifying competition from the agriculture, chemicals, metals and energy industries.

Thus, forest products companies must act now, lean in to positive public sentiment and secure their future as the world's preferred suppliers for sustainable global manufacturing across multiple industries. This transformation will require bold leaders who embrace disruption, invest in innovation and attract top talent. It's time to start seeing the forest for what's beyond the trees.

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