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Sustainable Products: The Greenest Wood: FSC Certified, or Bamboo?

The worldwide construction industry in the past 2-5 years has been inundated with a glut of products touting themselves as “green”, “eco-friendly”, and “sustainable”. Wood products used in flooring, structural, and interior components of buildings are no exception. Two of the front-runners for “greenest wood” source are bamboo and wood certified as sustainable by the Forest Stewardship Council (FSC). An easy answer to the question “which is greener?” is difficult to find. Comparison reveals that both wood sources have both positive and negative attributes when examined under the lens of sustainability, and that each product might be able to draw some benefit from the advantageous traits of the other.

The Forest Stewardship Council had its beginnings in 1993, after a 1992 conference of world leaders failed to cement an international responsible forestry management initiative (About Us, 1). The FSC, and its United States branch, recognize the value of America’s (and the world’s) forests, their impact on the global climate, and the tenuous state that forestlands are in today. The FSC also recognize and acknowledge the reliance of the world economy on forest products, raw and manufactured. The goal of their certification programs is to encourage the responsible management of forest resources, the conservation of materials during the harvesting and manufacturing processes, and increase the benefits to, while respecting the rights of, local and indigenous peoples (Principles 1-10).

The mission and values of the FSC in producing sustainable wood products seem admirable, but need to be examined in detail to evaluate their credibility and practicality. The main marketing tool of the FSC is the fact that once certified, suppliers and purveyors can market their products to private and commercial consumers as being sustainable, thanks to the FSC certification stamped on them. There are two main branches of the certification process. “Forest Management certification ensures that the forest is managed to the highest standards covering social, environmental, and economic issues,” while, “Chain of custody certification traces the wood from those forests through all stages of processing and distributing,” (The Chain 1). Companies may produce raw materials, manufacture wood products, transport them to end users, or some combination of the three requiring them to certify their processes and procedures accordingly.

There are ten principles that govern the FSC’s definition of responsibly managed forests. The first principle covers compliance with laws and FSC principles, the second addresses tenure and use

rights and responsibilities, while the third and fourth deal with the rights of indigenous peoples and community relations and worker's rights. Principle five covers benefits from the forest, six addresses environmental impact at some length and detail, and seven requires forest stewards to have a detailed and comprehensive management plan for their forest lands. The eight and ninth principles address the need for continued monitoring and assessment of compliance, and the maintenance of high conservation value forests. The final principle speaks to responsible plantation style wood farming (Principles 1-10). In America these principles are then applied to 9 specific regions of the country. Each regional standard for forest management takes into account the zone's unique environmental conditions, as well as any and all high-conservation value forests.

Chain of Custody Certification requires manufacturers who convert raw FSC wood into products, as well as carriers who ship and distribute those products to account for them through each stage from forest to consumer. There are four basic notions that govern the COC rules: ensuring that certified wood is accounted for as it passes along the supply chain, ensuring that when FSC wood is mixed with other wood, it does not come from controversial sources, provisions for the use of recycled/reclaimed materials, and providing for a variety of on product promotional and labeling options (The Chain... 1).

COC certification can be achieved in a variety of ways, depending on the role the entity seeking certification plays in the supply chain process. It is important to stress that for a product to be FSC certified, every company that handles it along the supply chain must also hold an FSC certification, though there are different levels of certification for a company to obtain. The transfer system of certifying products is the most stringent, requiring 100% of the raw materials or post-consumer recycled materials to be FSC certified. The percentage system requires the participant to reach a rolling average of 70% FSC certified raw or post-consumer reclaimed materials, and credit system certification is available for those who can not reach the rolling 70% threshold or are not dealing with consumers who exclusively want FSC certified products options (The Chain... 3). The FSC requires these businesses to identify Critical control points where there is a risk of FSC and non-FSC products becoming mixed up. They ask the company to show segregation of the products, in storage or time, clearly and securely identify batches of FSC materials, and document the sale and delivery of in coming and out going FSC certified materials.

While this all seems very complex and confusing, the fundamental idea behind FSC certification can be broken down into three basic notions. The first is that forests should be sustainably and responsibly managed, and that determination should be based on their location and individual circumstances. The second principle is that the manufacturing process should strive to be

as efficient as possible in its use of raw materials, by and waste products, and finally FSC wood must be tracked and documented through all of its stages to ensure that there is no misuse of the FSC label and that the final products are, in fact, what they claim to be.

FSC certification has also inspired some legal changes in the United States. LEED accredited professional designer, and sustainable materials expert Piper Kujac says that, “Fortunately the US has recently banned the import of 'illegally logged' timbers.. but I'm not sure how this is enforced exactly.. since unless there is a third party certification, there is no chain of custody proving the source or methods by which the timbers are logged.”

There do seem to be some inherent flaws in the FSC certification process, which were identified and reported by the Rainforest Foundation in 2002. The Rainforest Foundation alleged in a report they issued that the FSC was,

“knowingly misleading the public,” by allowing “the certification of timber companies that have been implicated in human rights abuses and logging in tropical rain forests that contain endangered species, as well as companies that have falsely claimed to comply with FSC’s audit requirements.” (mindfully.org 1).

Rainforest Foundation claims that there is a fatal flaw in the fact that the FSC’s independent auditors are directly linked financially to the parties that they are evaluating for certification (mindfully.org 2). Parties seeking certification are required to seek out on their own and enter into a contract with one of the 12 verification bodies that are allowed to issue certifications. The FSC’s spokeswoman Carolina Hoyas responded that, “Certification bodies are reimbursed for their efforts whether a certification is awarded or denied and the FSC itself is funded through donations.” There is also a cost associated with FSC certification, which can be substantial, and thus excludes some smaller timber farms. Kujac says, “A lot of smaller family-run farms, of American Walnut for example, cannot afford the whole FSC certification process, but do implement sustainable practices.”

Other areas of concern included certification of companies that were guilty of egregious human rights violations or logging and driving out endangered species, in one case threatening the habitat of Indonesian tigers (mindfully.org 4). The Rainforest Foundation argues a very passionate case, but it seems that in the six years since the report was issued the FSC has made strides to correct some of the flaws that it points out. They have addressed many of the human rights and endangered species concerns, but questions linger regarding the validity of a certification that is issued by a certifying body being directly compensated by the endorsee.

So then, perhaps bamboo is the greener way to make wood products, instead of certifying and endorsing a system of responsible hardwood forest management. Bamboo is considered a rapidly renewable resource, due to its excessively speedy growth rate. The basis of this growth is from a rhizome, a stem below grade that sends stalk shoots out the top and roots out the bottom. The plant grows to its full height within the span of a year, but requires between three and seven years to reach the “size and quality required for use as construction material or as a raw material for the production of products such as flooring.” (Bowyer et. all 4). The plant has long been used in the construction of homes and other structures in many parts of the world. In the United States it can be used to make flooring, cabinetry, some structural elements of buildings, as well as paper and fabric products (Bamboo Commercial... 1).

The Bamboo Thematic Network estimates that bamboo provides a sustainable income for up to 600 million people around the world (Bowyer et. all 3). The global market for the raw material is around \$12 billion and may almost double by 2015(Bowyer et. all 4). Many small farmer owned bamboo producing operations in Vietnam began as an attempt to quickly forest areas that had been devastated by defoliating agents during the war years and were highly susceptible to erosion (Bowyer et. all 3). Even the biological processes that the plant goes through are highly eco-friendly. Reporter Wendy Kauffman states that, “It’s highly efficient at taking in CO2 and holding on to the carbon as it exhales pure oxygen.” She also points out that it can be grown naturally at a high-production rate without the use of chemical pesticides or fertilizers (Bamboo Commercial... 1).

National Public Radio featured bamboo on its Morning Edition program in August 2007. Host Renee Montage reported that, “Much of the bamboo being used commercially comes from plantations in China. A lot of experts think it could be grown in the United States (Bamboo Commercial... 1).” This statement exposes two of the fatal sustainability flaws in commercial bamboo use; the product must be shipped a great distance in large container ships that leave a huge carbon footprint with every journey, and the style of farming that is used abroad to cultivate the plant.

Although there are around 1200 species of bamboo around the world, only one occurs naturally in the United States, and that one species is not suitable for commercial use in construction materials (Bowyer et. all 3). American Scientists are attempting to grow varieties of the plant suitable for United States climates and rapid procreation in laboratories but so far have had little success (Bamboo Commercial... 1). This means that a great deal of the world’s bamboo supplies come from the some of the worlds poorest and most loosely regulated countries like India, China, and Vietnam. The bamboo industries in these countries, and worldwide, lack critical oversight to

ensure that the sustainable resource of bamboo is grown and harvested in a sustainable manner. In many cases chemical fertilizers and pesticides are utilized to increase already high yields, despite bamboo's natural prolific and pest resistant characteristics. Often existing natural forests or open spaces are cleared indiscriminately to become bamboo plantations and the invasive non-native species of bamboo begins encroaching on the native species that exist in the lands bordering the plantation (Bowyer et al 5-7). Worker's rights are also a very big concern in these countries, although many producers are beginning to recognize this and are increasing wages and living standards for their workers accordingly.

Bamboo raw materials and finished products coming to the United States are transported by container ships, which leave a huge carbon footprint in their wake. The USGBC encourages sourcing of local materials and gives points for this in its LEED guidelines, but curiously still considers bamboo a "green material" despite its enormous transportation impact. Dr. Jim Bowyer and his colleagues also point out in their report that, "It is especially curious that the U.S. green Building Council, which requires that wood be FSC certified in order to garner points as a green building material has no similar requirements for bamboo"(Bowyer et al 7).

Dr. Bowyer and his collaborators have pinpointed the connection which just may create the greenest wood possible, a sustainably certified bamboo. The International Network for Bamboo and Rattan announced less than a year ago that they had undertaken a study of the feasibility of certifying bamboo products. They looked at the feasibility of both an independent and an existing (FSC) certification. The study concluded that bamboo certification was "feasible but challenging" and that INBAR wished to focus on three areas of concern, biodiversity, life cycle analysis, and alleviating poverty (Environmental Sustainability 1). A pilot program for FSC certified bamboo was recently launched in Colombia. FSC Certification's ten principles and criteria address many of the issues that persist in conventional bamboo growth and production, including responsible forest management, plantation impacts, as well as regional economic benefits, and indigenous people's and worker's rights. This valuable potential partnership could be a beneficial relationship to both parties. Through bamboo certification the FSC could gain a strong foothold in countries like China and India where the idea of sustainable hard wood forestry has yet to make significant progress. INBAR has reservations about the high cost of certification and if it is in fact feasible or practical for small regional farmers to undertake, but acknowledges that an existing certification system like FSC is more desirable than developing a bamboo-specific process from square one. This partnership has not yet been cemented but has the potential to exponentially increase the validity of both the FSC certification process and the credibility of Bamboo as a truly sustainable material.

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